COAL AGE

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The Future of Coal Prices

By Floyd W. Parsons

IT IS foolish to anticipate that there will be any real lack of coal in the United States during the lives of people living today. But there is another side of the question that yearly becomes more important, and that is the growing scarcity of certain grades of coal that have been most in demand. It is a fact that in all lines of production initial output is obtained from the highest grade and most easily accessible sources of supply. So it is in coal mining. The best coals are fast disappearing, and lower grade fuels with higher mining costs are now being attacked.

Anthracite coal, which especially interests domestic consumers in the eastern part of the country, comprises only one-fifteenth of our total coal resources. It is hopeless to expect that any new deposits of anthracite will be found. Since 1807, when the Pennsylvania anthracite was first discovered, the producers of this kind of coal have mined approximately 3,000,000,000 tons. Although this large output of hard coal amounts to only one-sixth of the total deposits, the fact remains that the best seams of anthracite have been largely depleted, and operations are now in beds that are thinner and deeper.

Whereas it required 112 years to produce 3,000,000,000 tons of anthracite, we may figure that at the present rate of growth that same tonnage will be mined in less than 20 years. Furthermore, in getting 3,000,000,000 tons of coal out of the mine and into the hands of the consumer it is likely we destroy a couple of billion tons in the ground and elsewhere—a loss that is unavoidable. All this leads to a single conclusion — anthracite will never be cheaper and must of necessity be more expensive as time passes. There will be advances in the art of mining, and these improvements in methods and machinery will undoubtedly reduce costs; but all such savings will be more than counterbalanced by increases in wages, higher prices for supplies and greater mining charges due to working less favorable seams.

Let us therefore, dismiss anthracite from our calculations and devote attention to bituminous coal.

Geologists tell us that in the United States we have about thirteen hundred and fifty billion tons of bituminous and semi-bituminous coal; of these huge reserves we have mined about thirteen billion tons and wasted at last 50 per cent. as much. In the face of such large resources this total exhaustion of less than twenty billion tons seems hardly worth noticing, but here is the trouble: Of our total bituminous deposits less than 5 per cent. contain coals that are today regarded as high-class fuel, and it is this better grade coal we have been mining.

Already in many parts of the United States there is an apparent scarcity of high-grade fuel. As time passes this shortage in special coals will become more acute, and will be felt in fullest force in the middle and northern Atlantic States. A great many people overlook the fact that 45 per cent. of our population inhabits 11 per cent. of our area. In New England, New York, New Jersey and Pennsylvania there are eleven times as many people on each square mile as there are in the West. In this congested eastern region, there are 700 people for every mile of railroad, while in the West there are only 252. Of all the manufactured goods produced in the United States nearly 70 per cent. originates in this small eastern area.

The industrial development of America is far from being uniform. The result is that we have a small eastern territory buzzing with business activity and entirely lacking in any native supply of coal. Furthermore, this congested region has no oil or natural gas and possesses only limited water-power.

The great cry on the part of coal consumers is for the best obtainable fuel, since it is well known that high-grade coals purchased at a reasonable price are most economical. Furthermore, various plants such as those serving utility corporations and gas companies have been built and adjusted to the use of only the best grades of coal. In order to burn lower-grade fuels many such plants must undergo modifications.

Very few districts producing high-class coal are close enough to be of use to consumers in the overcrowded middle and north Atlantic States. Even what coal is available is held in large part by great corporations. Slowly but surely the small consumer is commencing to grasp the situation. He has found that although Kentucky and southern West Virginia contain large supplies of the kind of coal he desires, the freight rates on tonnage from these southern fields are so high that the coals cannot be brought in by rail.

Practically the only available deposits of high-grade steam coal lying within reach of the Philadelphia and New York markets are in Cambria, Indiana and Somerset counties in Pennsylvania. Even in these few districts the undeveloped tracts are limited in area and will be rather difficult to develop, due to the thinness and depth of most of the seams. The situation in regard to gas and byproduct coals is even less favorable so far as the large eastern markets are concerned. West Virginia contains a large supply of these coals, but freight rates again render these southern fields quite inaccessible. Only a few small areas of gas and byproduct coals are available to the New York and Philadelphia markets, and these lie in Pennsylvania.

Each year now witnesses the exhaustion of a number of high-grade coal areas. Far more mines producing better grade coals are being worked out than there are new mines commencing to produce. Many investigators have reached the conclusion that the tonnage of high-grade coal shipped from the low

freight-rate territory into the Atlantic seaboard markets will not be increased beyond its present volume. These authorities expect a decrease in the shipments of such coal and anticipate that the markets will have to be satisfied with a substitute in the way of lower-grade fuel. The only other solution is that consumers will have to pay higher freight rates, thereby bringing in coal from more distant fields.

The coal industry, like every other great business, has developed through a series of stages. Only a few years have passed since there was practically no market for the low-grade coals. Up until recently there has always been an overabundance of fuel. The industry has been the field of bitter competition, with the result that prices have averaged low and profits nil. Furthermore, the consumption of coal in tons per capita has increased much more rapidly than has population. In 1850 the average consumption of soft coal for each person in the United States was only 0.12 ton. In 1880 the consumption had risen to 0.85 ton, while in 1900 it was 2.8 tons per capita. In 1910 the consumption had grown to 4.56 tons, while last year it had increased to 5.61 tons for each inhabitant.

It has only been a few years since the great markets in the vicinity of New York and Philadelphia were supplied with a splendid quality of coal which came from the Moshannon seam in Clearfield County, Pennsylvania. Now this famous bed is practically exhausted. A similar fate awaits the "Big Vein" in the Georges Creek region of Maryland. Forty per cent. of the original Connellsville Basin has been worked out. The well-known Irwin gas-coal field is about 70 per cent. gone. The same story may be told of other famous districts. All of this accounts for the fact that the prices of coal lands in all of the eastern fields have increased from two to four-fold during the last 15 years. In 1900 it was possible to lease a tract of high-grade coal by agreeing to pay a royalty of 10c. per ton. The same lease today would carry with it a royalty of from 20 to 40c. a ton.

Foreign Consumers Demand the Best

A further factor of great importance is the matter of enlarged coal exports. Combinations of strong interests are planning to materially increase our overseas shipments. The coals that will be included in such exports will come from our high-grade seams, for the cost of shipping a ton of coal averaging 12,000 B.t.u. is no less than the cost of shipping a coal running 14,000 or 15,000 B.t.u. Foreign consumers will demand the best we can give them, and this additional business is certain to further increase the scarcity of our best steam and gas coals. Another competitor of the domestic steam-coal consumer will be our enlarged mercantile marine.

Prior to the war Pennsylvania producers complained bitterly of the competition in New England of West Virginia operators. Such complaints have practically ceased. One of the dangers today is that freight rates from Virginia on water shipments are likely to be so high for the next few years that it will be necessary for consumers in New England to try and draw some of the high-grade coal they require from the limited Pennsylvania output.

In the matter of coal control the situation is far more stable than ever before. Only a few years ago there were from ten to fifty independent companies operating in each important coal district. Today the bulk of all the available steam coal in the East is in the hands of eleven companies. Four-fifths of the production of gas and coking coals is likewise controlled by fourteen large corporations. As for coke itself, 60 per cent. of the output in 1918 was produced by steel companies for their own use.

This centralization of ownership and control of our high-grade coal seams will not tend to reduce fuel prices. This fact alone is a boon to the industry and to the Nation, for although it may mean that consumers will pay slightly more to satisfy their fuel requirements, it also insures that mining will be conducted on a less hazardous basis through the installation of safety precautions and less coal will be wasted in the process of mining and marketing the product. In other words, centralization will do away with demoralization, and eventually the benefit will extend to the man who purchases the coal. Centralization has held down the price of anthracite coal and the same will be true in the bituminous situation.

Only One-Eighth of Shipments High Grade

The immense demand for coal during the period of the war brought on investigations that were sadly needed. For the first time in history coal men were obliged to carefully estimate their costs of production. Federal officials acting for the U. S. Fuel Administration made surveys of each and every producing field. This enabled them to classify all of our mines, grouping them according to the grade of coal they produced. These investigations showed more clearly than ever the scarcity of so-called steam and gas coals. In some pools less than 12 per cent. of the total shipments were of high-grade coal.

Coal mining differs from practically all of our other great industries. In farming the producer may bring science to his aid and replenish the fertility of his soil, insuring a continuation of good crops. Even in the matter of lumber it is possible for those engaged in the business to reforest worked-over areas. The coal producer has no such recourse and must be content to see his coal seam disappear for good and all. He must figure that his mine has a life of only 20 or 30 years, and during this time he must secure not only his profit, but regain his initial investment.

During the last twenty years the population of the United States has increased about 42 per cent. While this growth has taken place the output of coal has increased 172 per cent. The reason is that as civilization advances and mechanical means for doing things increases, the individual citizen has found more and still more uses for fuel. If the same comparative growth continues for 20 more years, the United States will have a population of 139,000,000 people, and the consumption of coal per capita will be approximately 10 tons yearly.

The outcome is plain and inevitable. Irrespective of temporary fluctuations, fuel prices will advance from year to year. What are known now as high-grade coals will disappear entirely. Seams that are now considered unminable will become valuable. Purchasers will buy coal exclusively on the basis of its heat values, and everyone will then understand that coal is not just coal, but that there is a wide difference in the varieties that are produced. Even today coals from West Virginia and Pennsylvania can be hauled by rail to Lake Erie, then shipped by vessel to Duluth and afterward hauled 500 miles inland and be sold successfully in direct competition with coals and lignites produced in the vicinity.

The coal industry is entering a new era, and those who are wise will not mistake the course of events.

Water Supply at Coal Mines

BY CARL SCHOLZ
Chicago, Ill.

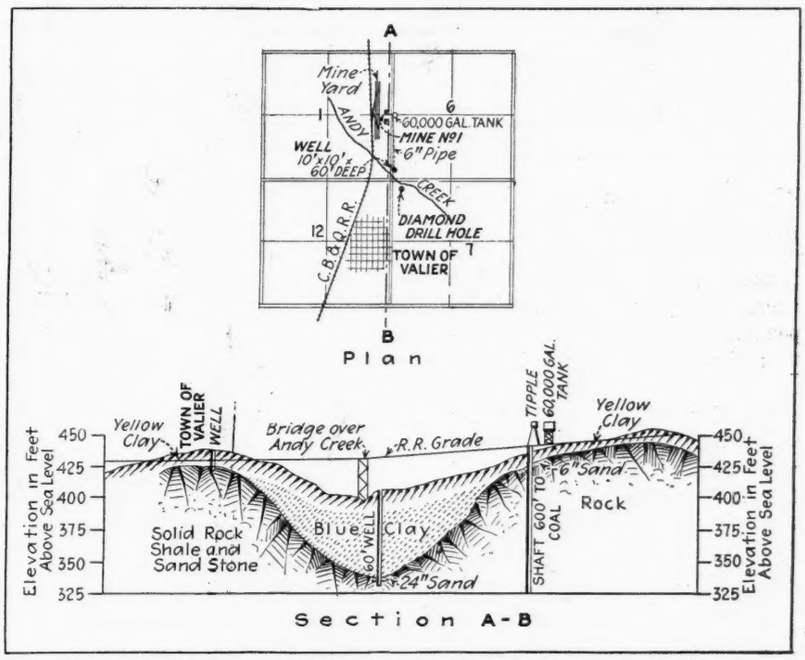
THE question of water supply at coal mines is an important one. Usually the water found in mines is not suitable for boiler or drinking purposes, and a supply for the operation of steam plants, for the washing of coal, and use in the wash- and changehouse must be obtained from some outside source.

In southern Illinois the water problem is unusually complicated because there are few springs, and the smaller streams cannot be depended upon for a constant supply. Surface reservoirs are subject to many difficulties, principally filling up by silt due to the heavy rains that carry sediment into them. The rate of evaporation, because of the climatic conditions, is high, and unless the watershed supplying the reservoir is properly cleaned and controlled by the coal company, the water becomes badly contaminated and is unfit for boiler purposes. The dams are subject to difficulties from muskrats, and usually a large expenditure is required for the purchase of the necessary land and pipe lines to carry the water to the required point. It has often become necessary for some of the railroads to haul five or six water trains per day during the dry season in order to keep the mines in operation.

In the case of the Valier Coal Co., the water question was carefully studied, even though the plant is operated by purchased electric power. Two sources were considered: First, the usual surface reservoir, a satisfactory site for which was found within a half mile of the mine; the second, a supply from quicksand beds which from the prospect drill holes were known to exist in the near vicinity. The estimates on the surface reservoir indicated an expense of some $30,000 for land, watershed and pipe lines, but to obviate this expense a test drill hole was put down a half mile from the mine where an old drill hole indicated several layers of quicksand about 60 ft. below the surface. In the accompanying illustration the mine is shown in the center of Section 1, the drill hole one-half mile south, and the town of Valier one mile south of the mine. Cross-section *A-B* shows the surface as well as the rock measures, as indicated from the drill hole in the northwest corner of Section 17 and the wells in town, and the shaft record. This shows that in days gone by Andy's Creek, which is now a small stream, eroded a valley nearly a mile wide and 100 ft. deep.

A 6-in. hole was drilled to the 24-in. layer of sand, and upon test this well produced 7 gal. of water per minute. It was estimated that if the size of the hole could be increased the flow would correspondingly become larger; this was proved by sinking a well 10 ft. square from which a supply of over 500,000 gal. of water per day can be obtained without lowering the water more than 50 ft. below the surface. While the well was quite dry until the 24-in. sand was struck, it filled up rapidly, and the water now rises nearly to the surface, indicating that the source of the water must be about as high as the surface is at the well location.

A deep well pump is now being installed so as to pump the water from the bottom of the well. A pressure tank has been erected at the mine on a 75-ft. substructure and a 6-in. cast-iron pipe laid from the well to the tank to insure an ample supply for fire protection and the needs of the washhouse. The maximum requirements of the coal company are about 50,000 gal. per day and the motor-driven pump controlled by a float switch insures the tank being filled to the top at all times.



LOCATION OF MINE, WELL, PIPE LINE AND TOWN OF VALIER

This pressure tank is high enough to also furnish the required head for fire protection to the town of Valier, and it is contemplated to extend the pipe line to the town for the convenience of employees and for fire protection. The pressure tank is connected with the discharge line of the mine pump so that by closing one valve and opening another, water under a 600 ft. head (approximately 250 lb. pressure per square inch) can be supplied to the mine pipe-line system, should it be needed in case of fire.

This simple solution of a vexing problem has suggested this article, which has been written with the hope that it may benefit others as it has this company.

LENS

The Coal Field of France*

By Frank Haas—Consulting Engineer, Consolidation Coal Co. Fairmont, W.Va.

FRANCE is a proud and thrifty nation. It was her pride, her thrift and her national policy of defense that made her try to develop an independent source of fuel. Unfortunately, her resources in this respect were meager. What coal she had was in small areas widely separated, and these areas were shattered by faults and folds. The struggling industry, when finally established, was besieged by the producers of Germany, Great Britain and the United States. The Germans, on the east, produced the cheaper and perhaps better Westphalian coals. To the north, England (within what is now but a cannon shot of the shores of France) mined and marketed a great variety of coal. On the south, at the doors opening on the Mediterannean coast, the United States was presently knocking. But still the industry thrived, and it was of some magnitude when the war came and all but destroyed it.

One of the principal coal fields is in the Department of Pas de Calais, in northern France. The center of this field is Lens, which was recovered from the Germans during the last months of the war. At that time the newspapers made the public believe that the recovery of this coal field would be a great victory. I anticipated the disappointment when the truth would be learned. Knowing the great constructive skill of the Germans, I could not but imagine that their destructive skill was even greater; and to place such a vulnerable thing as a coal mine in their path meant that destruction would be complete.

Since the recovery engineers have examined these mines and reports have been made. From these we learn that the mines can be unwatered in two years and that normal production can be achieved in five years. These engineers admit that they have seen only the surface devastation, but with deep shafts (some of them through quicksand), with gaseous workings and all main headings driven through solid rock, with thin seams and treacherous roofs, too many opportunities presented themselves to enemies bent on villainous destruction; and in my opinion it will be many more years, perhaps several times five, before Lens and the surrounding basin will again give France its former output of eighteen million tons of coal a year.

Lens is only a small town, having a population of about 30,000, but it is situated in an important center for iron and steel foundries, engineering works and factories. There is nothing in the town to attract tourists, and outside of the manufacturing and mining activities it is much like many other towns of northern France. The neatness of the cottages and multitude of individual gardens attract particular attention.

The inhabitants have their peculiar habits and apparently follow traditions in the pursuit of their occupations. Labor appears fixed, there being neither influx nor efflux of the population. Evidently "once a miner always a miner," and the son follows the father into the mines. If you flatter yourself that you know some French, don't depend on it in Lens; for you are likely to find that any conversation overheard will be in Flemish and not in French.

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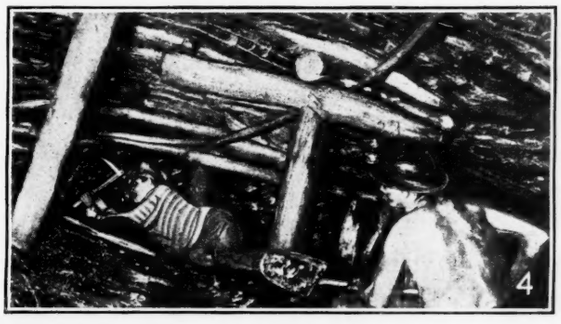

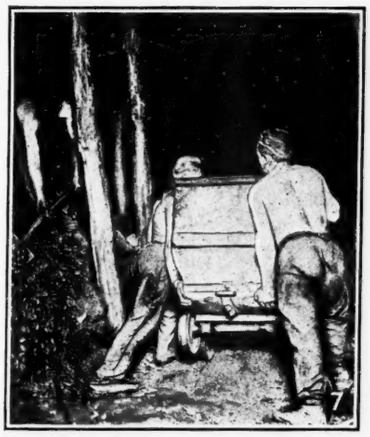

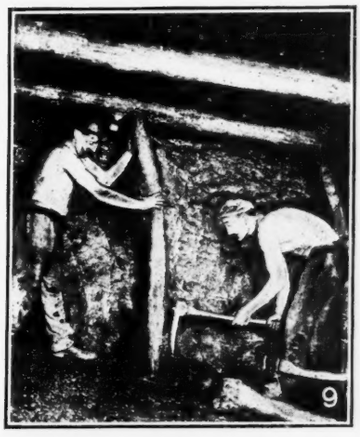

How French Coal Mining at Lens was Conducted Before the German Invasion

Fig. 1—Not much clothes are worn as a temperature of 90 deg. is not unusual. Fig. 2—Coal seams in the Lens region are comparatively thin, 12-in. seams being not at all uncommon. Fig. 3—Mechanical haulage, if any, is by rope usually of endless type with rope running over car. Fig. 4—The seams are nearly all worked longwall, the pitch being heavy and the roof bad; roadways are about 40 ft. apart and the coal is handled several times before it reaches the car. Fig. 5—There are no tracks on the tipple; instead there are iron plates and the cars are shoved around to the various screens and back to the cages, the work being done mostly by women. Fig. 6—Mine entries are usually driven in rock. Fig. 7—Coal from upper seams or heavy pitches is transferred to lower levels by chutes. Fig. 8—Breakfast in the air course at ten in the morning. Fig. 9—French miners are expert timbermen, both from necessity and practice.

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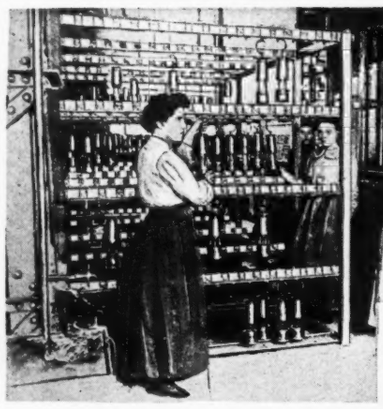

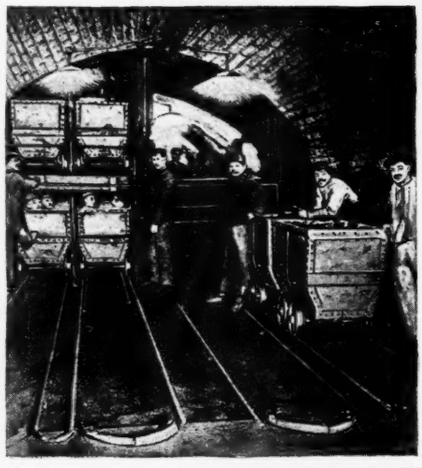

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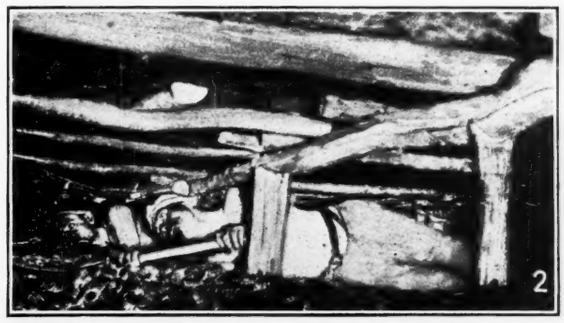

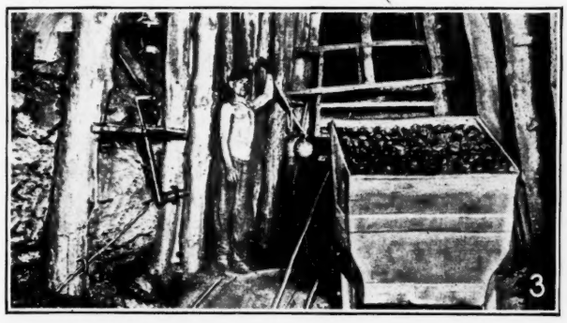

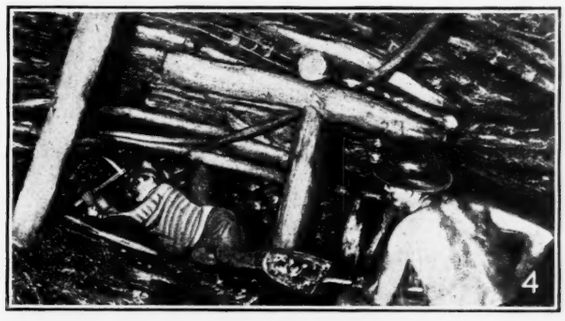

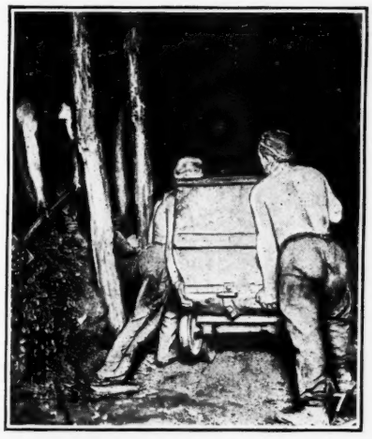

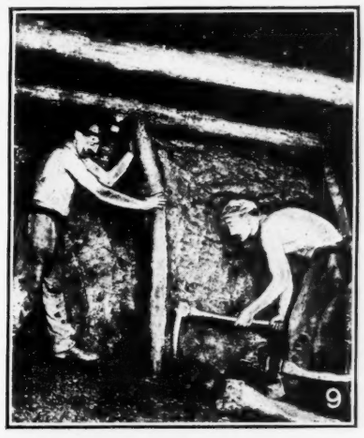

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that which in France corresponds to our Bureau of Mines. It was here that M. Taffanel worked out scientifically and experimentally most of what we know about coal-dust explosions. This station was built and the force organized shortly after the Courrières mine explosion, in which 1200 miners lost their lives. Previous to this explosion France had a particularly good record for safety, and Lens was for a long time a point of interest to English, German and French mining engineers who went there to investigate French methods.

It was here that the system of "minimum timber" was worked out which was eventually adopted by most of the European countries. This system is a method of cross timbering and is supposed to be carried out in all mine workings whether the conditions require it or not. Additional timber can be added as occasion requires, but the minimum must always be in place. Since the roof conditions in the Lens field are, without exception, bad, some such system is well suited to that region; but it has never been practicable to adopt it here, nor has it ever been so much as recommended in this country.

The average output per man per year underground in the Lens field is about 250 tons, while with us it is more nearly a thousand. The average earnings of a French miner at that time were about $0.90 per day. To describe the mining methods would be a story in itself; but briefly, "longwall" is worked is every conceivable manner, depending on the local conditions.

Courrières mines are within sight of Liévin. This group of mines, about 13 in number, is operated under a concession or lease from the French Government. The mines cover an area of about 13,000 acres, which is more or less completely underlaid by 40 seams of coal of various thicknesses. These vary from semi-anthracite to bituminous coal.

The mining of these various seams was conducted to a depth of about 1200 ft. The shafts are all connected underground, most of them being hoisting shafts. Their total output was about 2½ million tons annually.

The mines were opened in 1850 and the company had a very successful career up to the time of the disaster. Firedamp was not particularly troublesome, and open lights were used almost exclusively. When the mine explosion occurred it was the first large coal mine disaster in France, and as a result there was a lack of organization and of facilities for reëntering the mine after the explosion. Many lives, which prompt and efficient effort might have saved, were lost apparently by suffocation and even by starvation.

France has a normal coal production of about forty million tons and a consumption of about sixty million tons a year. Seventy per cent., or 28 million tons, was produced in the northern part of France forming a part of the area captured by the Germans. The mines in part of this area have, we know, been destroyed. Twenty million tons more coal was consumed than France produced, and the balance was adjusted by coal from England and Germany.

The terms of the peace and more particularly those defining the territory to be returned to France will have a large influence on the available quantity of coal that France will possess after the war. If Alsace and Lorraine go back to France, she will acquire a large active coal territory which is probably undisturbed and a large new and undeveloped territory in Lorraine which has been proved to contain workable coal; but some of it is at a depth of 4000 ft., and it is yet to be determined whether it is possible to mine coal at such a depth.

In spite of this France will face a shortage amounting to thirty or forty million tons of coal for the next ten years. In my opinion the coal industry of France will never entirely recover. It is reasonable to suppose that France will at once enter into an intensive reconstruction period requiring large quantities of coal. This naturally will be largely imported. Certain trade channels for coal will be opened and in time become so thoroughly fortified that it is doubtful whether the domestic supply will be able to replace it.

Outside of man power, coal will be the greatest need of France for the next few years, and on the ability of France to obtain that coal will depend her immediate future progress and recovery. Perhaps the United States can come to her aid. An addition of forty million tons to our annual output is only a trifling matter, and with the large ocean transportation facilities which we have, France may not plead in vain.

Photo copyrighted by Underwood & Underwood

The scarcity of coal was so great in and around Paris during the war that the children, as soon as they got out of school, ran to the coal depots and escorted the carts, anxiously waiting for a lump of coal to roll down from the wagon. They would walk for miles in this manner in order to obtain fuel to feed the kitchen range.

Regarding Longwall

By F. A. POCOCK
Philadelphia, Penn.

SYNOPSIS—*A five-entry system of mining is here proposed, employing longwall faces both advancing and retreating. Longwall conveyors will also be employed. It is the intention in this layout that ten tons of coal shall be produced per man employed. Discussion of the general scheme is invited.*

IN CONSIDERING any method of mine development it is well to observe the worst conditions that may be met. I have concluded therefore to consider the beds of the Freeport and Kittanning series. These are generally under light cover; not over 80 ft. on the average to the surface. They have between them from 30 to 45 ft. of shale, shaly sandstone, and the like—not very strong rock. We may therefore conclude that any longwall system operated in the upper bed, no matter which of these measures happens to be that bed, will force the breaking of the roof rock to the surface and will let the water into the workings.

The rocks in question will not support themselves over any considerable area of worked-out territory. We must therefore look for a system of mining that does not entail the maintenance of expensive packwalls, in order to keep a haulage road open between them. Next there is the fireclay floor which underlies all coal beds of this series, and will cause all kinds of trouble as soon as the water strikes it and the pressure comes on. This will heave and squeeze wherever given an opportunity. Nature objects to voids and fills them as soon as she can. Consequently the best method to pursue is to assist the lady if possible.

With the foregoing facts in view I have designed the accompanying mine plan. Because there are a number of periods in the development of any such extended operation, I have broken this plan up into periods of about six months each, the first break being at the end of the first six months and each succeeding break being six months later. This will save considerable explanation.

Taking up such a development, we will have to start with some basis and see how the whole plan will correlate therewith. In the present case we will make this the cutting capacity, without any reference to haulage or loading. Thus the first limitation will be the cutting speed, "A" in opening the mine, and "B" in producing tonnage to maintain an output for a sufficient time to warrant the cost of equipment. If we are to continue to operate the thin coal beds at a profit despite the increased cost of labor, machinery must take the place of men; and to use machinery we shall have to change some existing methods.

Referring to the accompanying plan a five-entry heading system has been adopted for the main headings. These entries are, say, 20 ft. wide with a 100 ft. pillar between. Let us acknowledge to ourselves that it is wrong, but see if the results will not warrant the radical departure from past and present practice. We will protect these main headings with a pillar of solid coal 300 ft. thick on each side and drive as few connecting stalls as possible, say every 150 ft., as shown.

It is to be remembered that the center entry is the main airway; it may be necessary to use two or three entries as haulage roads, depending on the desired output, while the others are the returns. We must play safe and start right, for 6,700,000 tons of coal must come over these roads during a period of ten years, if we maintain an average output of 3000 tons per day. We propose to recover over 90 per cent. of the total available coal.

Branch headings will be started as shown. Following the five-heading system, but having their cross

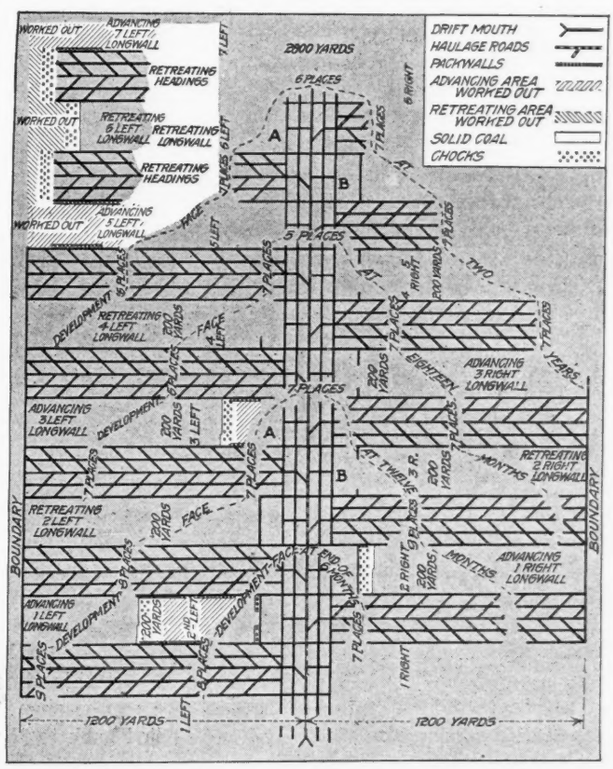


DIAGRAM SHOWING METHOD OF WORKING

headings driven at 45 deg., they will each cover 6600 ft. in width and will be staggered, first to the left and then to the right. There will be a pillar of coal 600 ft. wide left between each of these branch headings; these will be alternately worked as advancing longwall and as retreating longwall faces.

The 1st left longwall advancing will be opened as soon as the outby heading of the 2d left heading has reached the 300-ft. depth of the retaining pillar. Since it is being driven outby, it will be met by a face driven inby from the inby heading of the 1st left headings; when these meet the 1st left advancing longwall face will be in operation. In the same manner the 1st longwall face to the right will later be opened.

The pillar of coal between the 2d and 3d branch head-

ings, both to the left and right, will not be mined until after the advancing longwall panel between the 3d and 4th branch headings has reached the boundary. This alternate system of mining should be persisted in. None of the retreating longwall will be carried into the pillars *A* and *B*, which will be left to protect the main headings until the end of the mining. Now is it possible to get 3000 tons of output per day by any such system, from a 3-ft. seam?

The cutting basis will consist of three items, as follows:

1. That in the main headings. Using an arcwall machine with a 10-ft. cutter bar in five headings, each 20 ft. wide, we have $20 \times 10 \times 3 \times 5 = 3000$ cu.ft., or 110 cu.yd. Allowing a cubic yard to equal one long ton, this will mean 110 tons; and working three shifts per day, this amounts to 330 tons per day. The main headings will thus advance 30 ft. per day or 600 ft. per month of 20 days.

2. That in the branch headings. Here we have an average of eight places, with 20-ft. laterals, so we shall get $20 \times 10 \times 3 \times 8 \times 3 = 13{,}000$ cu.ft. or, roughly, 500 tons per day with an advance of 30 ft. per day.

3. That in the longwall faces. These being 600 ft. long, one cut will give $600 \times 10 \times 3 = 18{,}000$ cu.ft., or 666 tons.

As soon as the longwall advancing faces are opened up it will be advisable to work the cutter one shift in the longwall and two shifts in the branch headings. The first longwall should be opened during the fourth month and the second longwall, that to the right, during the fifth month. The cutting capacity at this time should be about as follows:

	Tons
Main headings	330
1st left branch headings	330
1st right branch headings	330
2d left branch headings	500
2d right branch headings	500
1st left longwall	666
1st right longwall	666
Total	3,322

Thus, by the sixth month we should secure the output aimed at. The 1st left branch headings should reach the boundary at about 18 months, the 2d left headings during the 23d month. The 1st right should reach this limit during the 21st month, and the 2d right about the 25th month. The longwall faces between these could reach the boundary about 30 days later. At this time the 1st left and 1st right branch headings can be opened as retreating longwall faces and be worked back to the pillars *A* and *B*.

From this section we would have taken 800,000 tons of coal. In the meantime the development work of the main and further inby branch headings will have progressed as indicated in the plan, and at a rate that will easily maintain the output at 3000 tons per day.

When, as an illustration, the advancing longwall between the 3d and 4th left has reached the boundary, of course the face between the 1st and 2d left will have been worked out and we can at once begin the retreating work, as shown in the upper left corner of the plan. We have then three faces. There will be about 550 tons per day from each of the headings and 666 tons from the longwall face, making a total of 1766 tons per day, which will be quite cheaply handled.

It will be seen that three-fourths of the branch heading and longwall may be worked retreating, as well as the coal left in the main headings and pillars *A* and *B*, from which 92,000 tons were taken in development work and in which 1,000,000 tons were left.

Packwalls, as shown, are only built on each side of the advancing longwall panels. They are to protect the loading road for a short period and the outlying pillar of each of the branch headings, so that they will not be crushed too much. But as the face of the advancing longwall opens the next lateral to the hauling road, the roof over the worked-out section will be shot down and allowed to pack, so that its weight will be taken off the packwalls to a considerable extent.

The total packwall work for this 6,700,000 tons will only amount to 12,000 lineal yards. Allowing that the walls are 18 ft. wide and 3 ft. high, this will amount to 72,000 cu.yd. Thus the cost for each cubic yard may be charged to 93 tons of coal.

The longwall face and the retreating headings will of course have to be followed up by the usual chock system, to prevent the roof from falling too close to the face. The amount of this chocking will vary in all localities.

The dimensions given in the accompanying diagram are due to the following reasons: (1) The five-heading system, giving an average of eight working places, can be easily cut in 8 hours. (2) The longwall face of 600 ft. both advancing and retreating can be cut across in the same time. (3) By having two conveyors on the longwall and the retreating heading face, each 300 ft. long, which is now possible, the loading of the coal can be reduced to the least possible manpower; and as the men will only have to shovel onto the conveyor, they should easily load 333 tons in 10 hours. Again, this will allow of the longwall coal being handled by two hauling roads at the same time, thus making the handling of the cars easier. In the retreating headings the conveyors will bring the coal to the central haulage road.

The advance of the track along the longwall end can be handled during the time the machine is cutting, and the tracks be ready for the loading; also, the conveyors can be moved up to the broken-down coal as the cutter advances. The haulage is simple, as any one can see, and may be either by locomotives or by rope haulage. The average distance will be 1.6 miles and the longest haul 2.25 miles.

With rope haulage it would mean 100 trips of 30 cars each per day, and as the empties will go in against the loads coming out, a rope speed of 15 miles per hour will suffice. There is ample room on the laterals for this length of trip for the longwall work. The lateral being the siding, the locomotive can bring its empty trip onto this siding, leave it and get the loaded trip from the longwall road, bring it to the siding and back the empties up to the longwall road.

The siding being between the airway and the return, doors at either end will control the ventilation and form the necessary lock for the air. The labor will vary, even in the same thickness of seam, because of varying roof and floor conditions in different localities; but after the longwall faces are opened, the system in my opinion will increase the output to at least 10 tons per man per day, for all men employed where run-off mine is shipped.

I trust that this plan of mining will merit the serious consideration of mining men and that its shortcomings will be discussed in the columns of *Coal Age*.

Annual Meeting of the Southern Appalachian Coal Operators' Association

SPECIAL CORRESPONDENCE

THE Seelbach Hotel, Louisville, Ky., was a veritable beehive of coal men on Feb. 14. About 200 or more operators were gathered there from the various fields of Kentucky, West Virginia, Virginia and Tennessee to attend the annual meeting of the Southern Appalachian Coal Operators' Association and the various group meetings of district organizations. Things were kept lively, owing in part to the fact that the coal operators practically all came from dry territory and struck an oasis in Louisville.

The group meetings were in reality merely get-together or monthly meetings, at which general conditions in the fields, marketing problems, etc., were discussed. About the only business meeting of importance was that of the Southern Appalachian Coal Operators' Association, which held its annual meeting at 11 o'clock, in the Red Room of the Seelbach, there being about 60 or more members present.

Election of officers for the Appalachian operators resulted as follows: President, John L. Boyd, Knoxville; first vice president, W. P. Davis, Knoxville; second vice president, John E. Patton, Chattanooga; third vice president, M. S. Barker, Louisville. J. E. McCoy, secretary-treasurer since the organization was formed in 1909, was renamed by the executive committee, which was composed of the following: E. C. Mahan, Knoxville; C. S. McManus, Fork Ridge, Tenn.; Alex Bonnyman, Knoxville; L. C. Crew, LaFollete; R. L. Stearns, Stearns, Ky.; Lucian Clarke, Nashville; W. P. Young, Nashville; C. W. Henderson, Knoxville. The nominating committee was composed of George M. Camp, Knoxville; C. M. Moore, Careyville, Tenn.; F. F. Floyd, Knoxville; and C. S. McManus, Fork Ridge, Tenn. One of the principal actions taken at the morning session was in connection with the announcement of plans for affiliating with the recently organized Central Coal Association, with headquarters at Cincinnati, a live young organization that intends to compile much excellent statistical information and promises to be of great assistance to the operators south of the Ohio River. Recognizing the fact that under the operation of the existing anti-trust laws the coal operators are greatly hindered in the proper marketing and production of their product, as well as being handicapped in the creation of stable markets for their output, the organization adopted resolutions calling on Congress to investigate the present regulations and to so change the laws as to bring about economic relief. These resolutions were as follows:

PROMINENT COAL MEN AT THE CONFERENCE
From left to right—J. E. McCoy, Knoxville; R. C. Tway, Louisville; G. D. Kilgore, Norton; E. R. Clayton, Harlan

Whereas, the exigencies of the war have made apparent the uneconomic provisions of the Sherman anti-trust law and the Clayton Act; and

Whereas, the said acts limit the right of collective economic action in business transactions, and we believe are a detriment to business development and progress, rather than a benefit to the economic well being of the nation, and

Whereas, the Government in many instances, for the reason of expediency has suspended certain provisions of the said acts, during the war, therefore, be it

Resolved, that the Southern Appalachian Coal Operators' Association, in convention assembled, respectfully recommends that Congress make a thorough investigation of the working of the said acts with respect to their economic effect upon industry and commerce, and that such necessary legislation be enacted as will meet the changing conditions of the business world while providing against the abuses sought to be remedied without working injustice and hardship upon legitimate business development.

Secretary McCoy made one of the best reports ever delivered at any coal meeting in the district, covering the activities of the association during the year. The report showed that the organization today represents about 95 per cent. of the productive capacity in its district, and an enrollment of approximately 85 per cent. of the operators. During the year it secured 46 new members, losing but 13—two by failure, two by resignation and nine by expulsion for failure to pay dues and assessments.

The financial report showed receipts of $25,481.49 during the year, plus a balance of $9732.65 as of Jan. 31, 1918, or a total fund of $35,214.14, against which were disbursements of $26,261.11, leaving a cash balance of $8953.03 as of Jan. 31, 1919. Estimated operation costs for the coming year, including salaries of $8500, amount to $20,319, excess resources being figured at somewhat more than $13,000. During the year the organization secured membership in the United States Chamber of Commerce. Monthly meetings were held by the executive committee, at which traffic matters, labor problems, appointment of district fuel administration representatives, etc., were taken up. Quarterly meetings were held by the organization throughout the year, at which various matters were attended to, including appointment of directors for the various sections to work with the National Coal Association. At a session on July 26 the organization opposed the open saloon during the war, and sent in resolutions to President Wilson and the National Coal Association reflecting its attitude.

Receipts for the year as compared with previous years showed a decline of approximately $15,000, due to there being no special assessments and less special work in connection with credit information, which was

not necessary under Government regulation of prices and shipment of coal on a sight-draft basis. This work will again be resumed, as will also an interchange of information or market data. Today the organization is making daily clearings for producers with an annual output of approximately 5,000,000 tons. Members were called upon to submit their production costs in order that costs for the various fields may be worked out, and it was also recommended that a good accountant be secured to represent a joint committee of leading associations in the district, to handle tax matters. The remainder of the session was given over to routine matters, there being nothing of special interest brought out. At the joint session held in the afternoon approximately 200 operators were present, the room being crowded. It was stated that the men present represented organizations controlling between 50,000,000 and 60,000,000 tons of annual production. At this session an interesting talk was delivered by J. D. A. Morrow, general secretary of the National Coal Association, who discussed the general work of the organization during the year, legislative matters, marketing and labor conditions, and the general situation.

L. F. PRATT

Mr. Morrow mentioned the new tax laws and the fact that coal operators are being unjustly taxed out of proportion to other lines. He referred to the coöperation of the coal operators during the war, and the assistance which they gave in bringing the war to a close, and emphasized the coöperation of the United States Railroad Administration with the operators and the Fuel Administration, and the willingness of Director General Hines to assist in bringing the coal trade back to a peace-time basis. Mr. Morrow urged a continuation of the direct shipment of coal, indorsing the stand taken by the Fuel and Railroad Administrations in enforcing this plan. Banishment of cut-throat competition and substitution of open competition was advocated, to replace the type of competition met with before the war.

At 7 o'clock in the evening a joint banquet was held in the Seelbach auditorium, on the tenth floor of the hotel, more than 200 guests being present. Incidentally, the gathering was in a more happy frame of mind, as the weather had turned raw and cold, with a wet driving snow, which encouraged the operators in the belief that there may be some winter weather before the close of the 1918-19 season.

Judge H. B. Lindsay was toastmaster at the banquet, while the principal speaker of the evening was Ex-Governor John Franklin Fort, of New Jersey. Governor Fort discussed the export coal outlook, the conditions abroad and the possibilities in foreign coal markets for American coal. He also referred to the anti-trust laws and the need for changing these laws in order to aid coöperation, better organization of large interests, and better marketing and lower production costs. His talk in part was as follows:

H. B. LINDSAY

It is generally recognized that coal will become one of the most vital factors in determining industrial expansion and the growth of international trade from now on. The coal resources of all the leading coal producing countries of the world, with the exception of the United States, have suffered immeasurable damage during the war. While virtually all the leading coal producing countries of the world show a steady loss in coal output since the beginning of the war, the production of coal in the United States has increased on a large scale. This rapid expansion of the coal producing facilities of the United States, together with the fact that the United States contains the largest known resources of good coal in the world makes this country the logical future source of supply for a large part of the world's coal export trade.

The war has produced a universal dearth of coal for industrial purposes in foreign countries. Conditions surrounding the coal situation in Great Britain and Germany at the present time do not permit of a large exportation of coal. It is quite likely, too, that the coal industries in those countries, which next to the United States were the chief coal-exporting countries of the world, will have enough to do to relieve the domestic coal shortage, and to supply the needs of their domestic industries during the reconstruction period.

That leaves a market of millions of tons of coal which have to be supplied to meet the needs of coal-consuming countries which have insufficient or no domestic coal resources. In 1912 the total coal exports of the chief coal fields of the world amounted to about 180,000,000 tons, including shipments by rail and sea. The world's sea-borne foreign coal trade amounted to approximately 95,000,000 tons in 1912.

Although the United States is by far the largest coal-producing country in the world, we ranked third, before the war, among the leading coal-exporting countries. In 1913 our coal export amounted to 23,007,229 tons, of which Canada alone took over two-thirds.

Since the beginning of the war a great change has taken place in our coal-export situation. The supply of the world's coal markets has shifted. Our exports of bituminous coal to Latin American countries have increased from 441,368 tons in 1913 to 3,152,107 tons in 1918. Our exports of coal to other parts of the world have increased also.

Provided the problem of shipping and of oversea freight will be settled satisfactorily, so that our American coal can be shipped at freight rates which will allow the American exports to compete in foreign markets, a promising future appears to be in store for the coal-export trade of our country. We have a bountiful supply to furnish, the foreign demand for it is constantly increasing, and with our newly established banking and credit facilities in foreign countries, aided by the Webb law and the facilities of our newly created merchant marine, the future position of the United States in the oversea coal markets seems assured.

Our export trade of coke shows a similar steady increase in volume. It has grown from 900,672 tons in 1913 to 1,413,886 tons for the first eleven months of 1918, an increase of a half million tons, and this in spite of the fact that there was a growing demand at home and that avail-

able ship tonnage was restricted and freight rates abnormally high.

There is a strong tendency among business men to remove restrictions against coöperation. The Sherman law of 1890 cannot be claimed to have been a business success. It was and is an innovation in business. Many of the originators and its later sponsors do not now claim it to have been a success. The courts have been compelled to interpolate into the written statute a court construction as to the "rule of reason" to make it workable with any degree of fairness. It has not helped the cause of the capitalist, laborer, dealer or consumer to any discernible extent. Nobody is entirely satisfied either with the act or its effect in operation. It has never restrained a capitalist, nor has it ever helped a laborer, nor benefited any customer in any commodity sold to him.

During the war it has been practically inoperative. If this law had been enforced in its letter, it is doubtful if the war could have been as effectively fought, which the neglect to enforce it permitted to be done.

Shall this country in its business relations permit that act to remain on the statute book as it is and go back to its strict enforcement in all its conditions? Is it not time for Congress to reconsider this whole question of anti-trust legislation? The total disregard of individual needs and of joint individual interests should not be continued.

That combination should be regulated in the public interest is clear. But the control should not be entirely governmental. It should be under mutual arrangements by joint official and individual action. The business men should have the right to confer with the official to see if the two acting jointly cannot agree on the fair thing. No man should be in a position of being a lawbreaker and told he is one, as the first information that he gets as to an error in his way of conducting his business.

Coal Mining in India in 1917

The annual report of G. F. Adams, Chief Inspector of Mines of India, contains statistics and other information of interest about the mines of India for 1917. During the year covered by this report the average number of persons working in and about all the mines of India was 211,881, of whom 133,042 worked underground and 78,839 on the surface. Of this force 131,672 were adult males, 72,770 were adult females and 7,439 were children under 12 years of age. Those employed in coal mines numbered 153,683, which is an increase of 10,224 over the number employed in 1916.

The output of coal was 17,326,384 tons, an increase of 907,302 tons over that of 1916; the average increase during the previous ten years was 730,641 tons. The amount consumed at the mines—1,835,510 tons—was about 10½ per cent. of the total tonnage, comparing closely with conditions existing about the Pennsylvania anthracite mines in this respect. All the better grades of coal were requisitioned by the government for military purposes at definite prices and were given priority as regards transportation. This arrangement gave the inferior grades of coal an unusual advantage, causing such a demand for fuel that mines started up which had not been in operation for years. The output per underground employee for the year was 182 tons, while 113 tons was the individual average output for all employees.

The question of labor was the controlling factor in the production situation in India; with an adequate supply of labor the tonnage could have been materially increased. There was also difficulty in obtaining machinery and supplies, which handicapped development and increased the burdens of the big plants, especially those mining at a great depth. In 1917 there were 175 fatal accidents in all the mines of India; this was an increase of 25 over the record for the previous year. As a result of these accidents, 201 deaths of employees occurred. However, there was no single accident in which a large number of employees lost their lives. Of these accidents 91 were supposed to be nonpreventable and 46 due to the fault of the person killed. The largest increase was owing to falls of rock or coal; such fatalities amounted to 92, which is quite an increase over those of the previous year. Next to falls of roof, haulage accidents (19) caused the largest increase; this compares with 12 from this cause in 1916.

The death rate per 1000 persons employed was 1.06; per million tons of coal hoisted was 9.41—a slight decrease over the average of the preceding five years. Of the 201 persons noted above as killed in all mines, 163 occurred in coal mines; of this number 61 persons were killed by falls of roof, 50 by falls of rib, 16 in shafts and 20 by haulage.

Obviating the Fire Hazard by Building New Structure Around Old One

In the accompanying view is shown the engine house and substation at the Cranberry mine of the Cranberry Fuel Co., McDonald, W. Va. The structure is built of native stone and is thoroughly fireproof, measuring 80 x 43 ft. It is 30 ft. high from the water table. The inside is plastered with lime and cement mortar. Three sides of the new structure came inside of the

VIEW OF NEW FIREPROOF STRUCTURE

old building which occupied the site, while the remaining wall was outside. Due to this the erection of the new building was quite a difficult piece of work. However, at no time during the progress of the work was it necessary to stop hoisting coal, and the power supply was never interrupted. Steel trusses and roof frame now replace the old wooden roof. Part of the old building can be seen in the illustration; but this will be removed in the near future. For many years the old building was a potential fire hazard, but the new structure has largely eliminated the danger from conflagration. T. L. Yon & Co., of Huntington, W. Va., were the contractors and builders.

A REAL OPPORTUNITY for research is offered in connection with pulverized fuel. Ash, slag and clinker are a live problem; to prevent their formation on tubes, checker work and furnace walls is absolutely essential. Methods of combustion and furnace design are of real importance. Scientific analysis of the difference in heat transmission due to radiant fuel and ash in suspension has furnished an opportunity for investigation.

Timbering in English Mines*

SPECIAL CORRESPONDENCE

THE question of substitutes for mine timber has long been a subject for the consideration of the English mining engineer, but until the commencement of the war supplies of timber for coal-mine use were both plentiful and moderately cheap so that the matter received no serious consideration. However, when the war started, the question of the supply of mine timber became quite a critical one, owing to the fact that 85 per cent. of the timber used for mine props was imported. The matter assumed a serious aspect and it was thought that some of the mines might have to close down.

Owing to the large supplies of home-grown timber standing in many parts of the country, the scarcity of timber has not been so seriously felt as was at first anticipated. The home-grown timber, while not so good for mine props as Norwegian, has served an admirable purpose. Previously to the war there was a growing demand for timber in European countries, and although immense supplies were to be obtained from Russia, it was a question how long these would last at the rate of depletion. The British Government set aside a certain sum with which to purchase land and to start a number of forests on a large scale. However, this plan has not yet matured, and Great Britain is almost entirely dependent on colonial and foreign supplies of timber. It is therefore essential that the schemes for forestry development should be pressed forward by the Government through all its agencies and landowners, and that forestry associations combine to make it an unqualified success.

SUBSTITUTES HAVE NOT PROVED SUCCESSFUL

The use of substitutes such as concrete props has been widely discussed, but so far they do not appear to have achieved any great success; they were said to be too rigid, that they split into parts and were difficult to withdraw. The only place where reinforced concrete was thought to be of much service in dispensing with timber was in the area of the shaft bottom and pillar. Mr. Evans suggests that for at least 200 to 300 yards or more on either side of the shaft bottom all main roads should be arched with girders on brick or concrete walls. This would not only save timber but would largely do away with the accumulation of dust where in some cases it is most prevalent. Other substitutes for timber have been tried in the way of steel props and girders.

Wherever timber is used every effort should be made to protect it and preserve it against breakage; this requires strict supervision, modification of present methods and the coöperation of all workmen and more particularly the mine officials. It is undoubtedly a fact that a considerable amount of timber is broken, largely owing to the impracticable method of setting it. In nine cases out of ten if a workman is setting up a collar he will do so without giving any clear space for the side pressure, ofter putting in a wedge to make it tight; consequently, in a few days the collar breaks in the center and has to be replaced (see Fig. 1). If the official in charge had been sufficiently observant and diligent, he would have prevented this and the collar would have had a much longer life. In other cases the collar may not be made end-tight, but a piece of timber may be wedged in over the center of its length, thereby putting a load at the wrong place. When it is remembered that the carrying capacity of a timber collar depends on the method of loading and that the breaking point may be increased from four to twelve, according to the method of load distribution (Fig. 2), then it is essential that this matter should receive the attention of all mine officials.

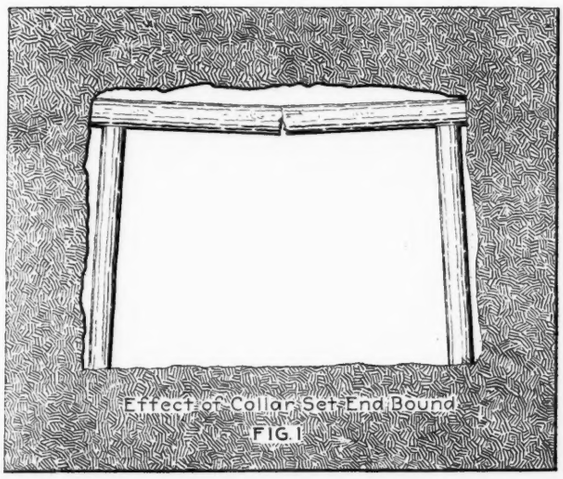
ADDITIONAL SUPPORT FOR IMPORTANT COLLARS

When necessary, additional support should be given to important collars; this can be done to advantage on roadways where there is sufficient height. A method commonly employed to give greater strength to collars at their weakest place is called the herringbone system (Fig. 3). This method also correspondingly strengthens the props which support the ends of the collar. Timber reinforced in this manner has been known to last for years, and although the collar may give way, the herringbone support usually remains intact and sound. If greater strength is required, then a double herringbone system may be adopted; this consists of a short horizontal strut under the middle of the collar with supporting timbers, as shown in Fig. 4. The efficiency of the herringbone method lies in the fact that the struts are short and withstand great pressure; also there are several places which absorb the lateral and vertical pressures.

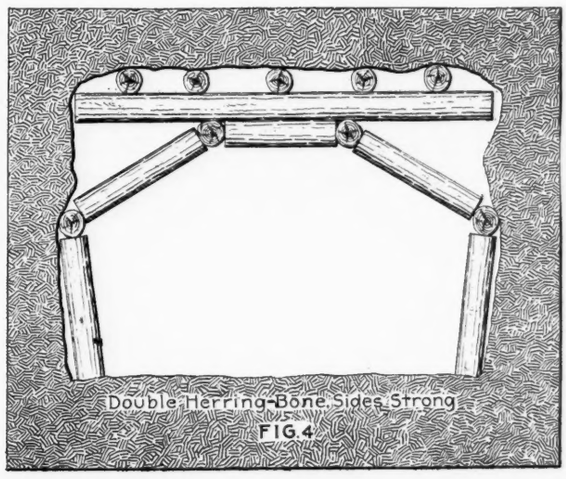
If the roof and sides are moderately strong the simple method shown in Fig. 5 may be adopted. If the roof is tender then either the double herringbone system may be adopted or collars may be placed, and then be supported as shown in Fig. 6. Previous to the adoption of the herringbone system steel girders were often used on the roadways and cross roads of longwall workings; but owing to the pressure these had to be frequently renewed or reset on account of becoming bent and twisted before the face had advanced many yards. The steel girders, however, are said to be preferable to the timber collars as they can be straightened and used over and over again. The herringbone system of timbering in the roadways has been extremely successful in the mines of Great Britain, both from an efficient and an economical point of view, as practically little new timber is required for long periods.

The question of substitutes for timber will now undoubtedly have to be seriously considered, as the demand for timber will be so great for buildings, for use in connection with railways, about mines and for other purposes that there will be little prospect of the supply being adequate or prices being much reduced. The use of steel props at the face has not received the con-

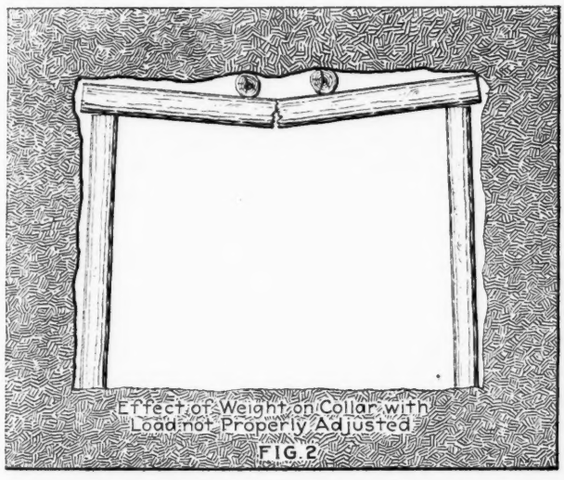
*Abstract of a paper by S. Evans read at a meeting of the National Association of Colliery Managers of Great Britain.



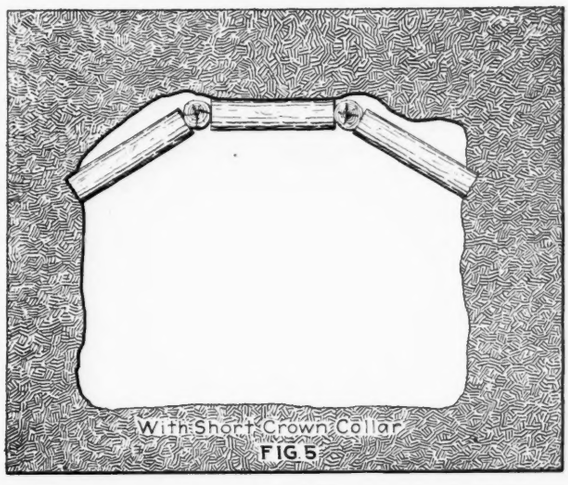
Effect of Collar Set End Bound
FIG. 1



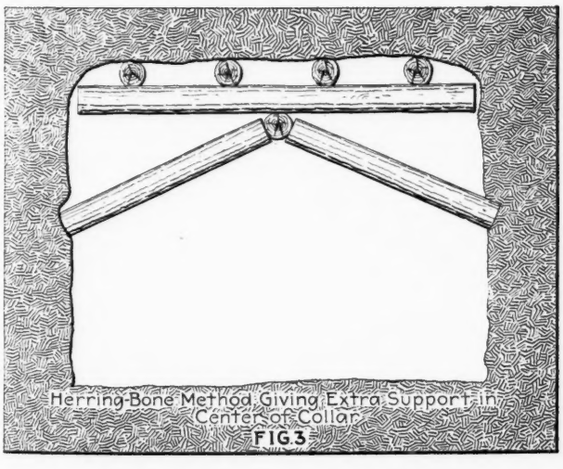
Double Herring-Bone Sides Strong
FIG. 4



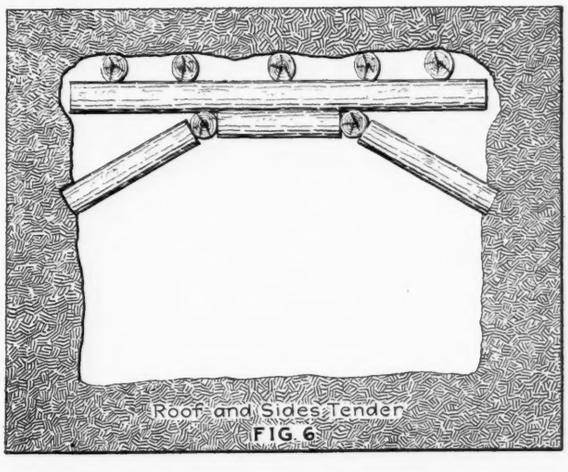
Effect of Weight on Collar with Load not Properly Adjusted
FIG. 2



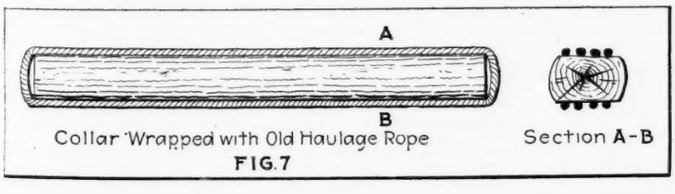
With Short Crown Collar
FIG. 5



Herring-Bone Method Giving Extra Support in Center of Collar
FIG. 3

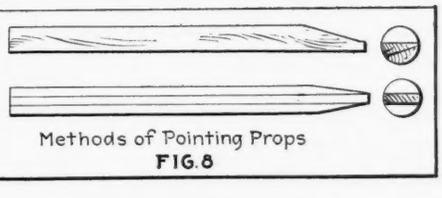


Roof and Sides Tender
FIG. 6



Collar Wrapped with Old Haulage Rope
FIG. 7

Section A-B



Methods of Pointing Props
FIG. 8

Good and Bad Methods of Timbering in Longwall Workings

Scarcity of timber in Great Britain necessitates conservation methods and the use of substitutes wherever practicable. Steel and concrete find increased application in roof support

sideration which it merits, probably due to a certain amount of prejudice of both managers and workmen. Some collieries have made attempts to use them and, for some reason, mainly owing to loss from their being buried and from their initial cost, have abandoned the idea as being impracticable. Other collieries have given them a thorough test and have found them to be satisfactory from all points of view.

After 20 years' experience with the continued and extensive use of steel props, Mr. Evans has proved them to be of great service and especially desirable from an economic point of view. They resist a much greater pressure than wood and can be used, after being straightened, for many years; in fact unless they are broken, they have almost an unlimited life. They are quite as safe as wood, are as easily set and are more easily drawn. The loss through breakage and from falls is small, and the cost per ton of output bears no comparison with wood, especially if both top and bottom are strong.

Steel Unsuitable Support for Tender Roof

It has been said that in the case of tender roof, steel is most unsuitable for support as it permits the roof to break around it; but this objection can be overcome by using a fairly large cap piece on top of the prop, thus distributing the weight over a larger area. Similarly, a footpiece is placed under the lower end of the prop. It may be found that, at least for the next few years, the initial cost of steel will not be much higher than timber. and consequently the use of steel props may be more universally adopted as they are considered the best substitute available. In order to give a longer life to wood collars some managers in Great Britain are making use of their old haulage ropes. The collar is flattened on two sides, much the same as a railroad tie, and then several coils of wire rope are passed longitudinally around the collar, as shown in Fig. 7. These ropes are secured in position by nails or staples, and afterward a wooden wedge is driven between the ropes and the collar at each end to keep the ropes tight. Although the timber may break, it is reasonably safe, as it is held by the coils of rope. This method is said, by those who have used it, to be quite effective.

As the softer woods (those commonly used for mine timbers) of Great Britain become exhausted it may be necessary to use the harder varieties. These latter woods are generally unsuitable for props but may be used at the longwall face as supports for the top on the gob side; such supports have been used many times before being of no further use. In such timbering the bottom front piece of timber is placed parallel to the face and bedded on slack, but no corresponding piece of timber is placed on the back side of the crib at the bottom. The wood pack is therefore more easily withdrawn. This is done by taking out the slack from under the bottom frontpiece and then shoveling out the remainder of the slack. If the wood cribs are sufficiently close, little of the timber is lost by falls in the gob.

The timbering at the face just described is able to stand a tremendous pressure and, as it can be made to cover large area of roof, often prevents the top from breaking down. Mr. Evans believes that if this system of timbering faces could be generally adopted a great saving of timber could be effected. Careful consideration should be given not only to the setting of timber but also to its withdrawal. It is now compulsory on the part of certain mine officials to examine all roof from which timber has to be withdrawn, and this duty should be most regularly and consistently observed.

Timber allowed to remain too long in a gob not only becomes a source of destruction but of danger, and it should be imperative on all officials to see that rock packs are made up without unnecessary delay and that all timber is withdrawn as the face advances. In this way numerous props may be prevented from breaking and be used over again. The suggestion is made that in all large collieries there be a special official whose duties shall be confined to the oversight of timbering generally; he shall see that props are withdrawn without delay so as to prevent waste and loss so far as possible. He shall make a daily report as to all timber which is either being buried or not withdrawn. Props left at the side of packs in roadways after the packs have been made up serve no useful purpose and frequently do harm; these props should be taken out so as to allow the gradual subsidence of the roof on the pack. No props should be buried in a pack unless it is absolutely dangerous to remove them.

Props Should be Carefully Tapered

It is the opinion that all props should be tapered before being sent into the mine, but this is of little use unless the work is properly done. If a prop is 6 in. in diameter and say 5½ to 6 ft. long, it should have at least a 10- to 12-in. taper and a portion not more than 3 in. in diameter at the tapered end. Unless this is done properly the prop tends to break as before. For the prevention of waste a face should be advanced as quickly as possible and worked at least 16 hours out of the 24. This means not only that much timber is saved at the face, but also in the roadways and crossways; consequently, the repairs to such roads are reduced by at least 50 per cent. as compared with a face moving slowly.

The question of having as great a length of face as possible between roadways has in a great many cases received preference, owing to the cost of brushing top and for maintenance of roads; in most cases this has been done at the expense of the timber used. Now that timber is so expensive, and may become quite scarce in the near future, it is considered questionable if this policy should be pursued. The timber cost at most collieries now far exceeds the expense of brushing top and repairing roadways; and Mr. Evans urges that the length of face between roadways be reduced, provided a saving of timber can be effected thereby, even if the repairs to roadways are increased. All faces should be kept as straight as possible and be advanced regularly so that no sections extend back into the gob; in the latter case a greater length of face has to be supported and the regular subsidence of the roof is interfered with—it tends not to break at regular intervals. The roof at a longwall face often proves to be bad and requires more timber if the face is not kept straight.

Packs should be of sufficient width and well built—stowed as tight as possible—as these are the only supports on which a roof should rest. If peaks are improperly built or are not of sufficient width, the weight must settle on the timber, often causing it to break.

In the discussion following the reading of Mr. Evans' paper the idea was expressed that to get a good pack it should be built of rock and timber be done away with altogether. Others knew from experience that it was not always possible to do without timber cribs at the face.

Cribs are sometimes very essential, as there may be tender roof in some parts of a mine and not in others. Mr. Evans called attention to the fact that he had not recommended the use of timber cribs, although he considered that there were circumstances in which they were not only an advantage but were almost essential.

The idea that Mr. Evans intended to convey was that in the future, when props would be more difficult to obtain, that it might be necessary to use hardwood cribs at the working face as a substitute for props. He agreed that if an abundance of good material was available for rock packs then it was not desirable to use too many timber cribs, especially in longwall workings, as they might be an impediment to the complete subsidence of the roof.

Some illustrations were given of new systems of pointing props (see Fig. 8). The method at the left of the illustration gave good results and the one to the right even better results; both systems have recently been demonstrated in practice as cheap and effecting a reduction in the number of props used—the props were 5½ ft. long.

One of the War's Heroes

Col. G. A. Burrell has, during the war, had charge of the chemical-warfare research work for both War and Navy Departments. He had full charge of the investigations preliminary to the manufacture of toxic gases, gas masks, smoke screens, incendiary bombs, gas shell, etc. A staff of 1900 people were engaged in the work, which thus formed the largest research organization in the world. The work started in the United States Bureau of Mines and was carried on by that organization until July 1 of this year, when it was transferred to the War Department to become a part of the newly organized Chemical-Warfare Service. Now that the war is over, Colonel Burrell will return to Pittsburgh to resume, by the way, his consulting engineering practice, which covers oil and gas problems, mining problems and chemical-engineering work in general.

Colonel Burrell states that the gas masks finally developed for the American soldier were the best in the world. Prior to the close of the war toxic gases made in America were being used in France and when the war ended more were on their way to France. Authorities fully expected that one of the gases being manufactured would be more effective than any hitherto used. Huge gas-mask and toxic-gas plants which embodied some of the greatest developments in chemical engineering during the war were put in operation in this country. Gas masks were the first American-made equipment for the American soldier to arrive in France. Every American soldier had a gas mask of American make, and at the time of the signing of the armistice the United States was making more toxic gases than either France or England. Col. Bradley Dewey had charge of the manufacture of gas masks and Col. William H. Walker of the manufacture of gas.

The toxic-gas manufacturing industry is dangerous from first to last, whether we consider the experimentation or the strictly manufacturing end of the business. A large degree of real heroism was demanded daily of those who undertook this important work.

Minecdotes

A Little Matter of Annealing

Rolling in his mouth a cud of tobacco large enough to knock a gin cat's eye out at forty rods, "Scotty," the pit boss, began:

"Boys, I used to be the derndest kidder that ever lived; but I was cured, and suddenly at that. It was like this: One of the crossheads of the duplex hoisting engine needed rebabbitting. About this time we got a new fireman in the boiler house, and this chap possessed more ambition than experience. One Sunday the hoister took out the crosshead and told the fireman that he could take it over to the drill press in the blacksmith shop and drill a few more anchor holes in it. I happened to be within hearing distance at the time, so I slips over to the shop and crosses the belt on the drill press. When the drill was started it turned backward and would not cut. The fireman never noticed this. I just casually happened into the shop again, and in answer to his question, I told him that the crosshead was too hard and that he would have to anneal it in the forge fire. No sooner said than done. Pretty soon the hoister came over to the shop, and you can bet that he was not long in getting things straightened out.

"Things run on for quite a while. Finally, cold weather set in, and it was necessary to run steam in the hoisting shaft to keep it free of ice. The steam made it very foggy on the bottom, and it was practically impossible to see anything. One day the mine was idle and I had a bunch of tracklayers over on 3d East, laying some new motor road. I had to come out for my dinner, so along about noon, when I came to the bottom, I never thought and gave the hoister three bells. In a minute I received the answering bell, so I gave him one to hoist away. Boys, what did I do? Nothing; only I stepped into five feet of ice water in the sump at the bottom of the shaft. I thought all the time that the cage was on the bottom. Well, I finally got outside, but I was dern near frozen. I started in to give the Hoister Billy h—, but he just grinned. After I had finished he said:

"'Scotty, always remember that a man who gives a joke must be able to receive one in turn. When you signaled I knew your whistle, so I decided to just give you an "annealing." The fireman requested it.'"

Legality of Joint Sales Agencies

By A. L. H. STREET
Attorney at Law, Minneapolis, Minn.

A COUNTY association of coal operators asks the opinion of *Coal Age* concerning the propriety of forming a pool for the sale of the members' products. "This newly formed association," our correspondent writes, "represents through its membership over one million tons of bituminous coal output per annum. Owing to conditions, these operators are striving to build up a trade without running foul of the law, whereby they can continue to do business. Many of their operations are developed to a point where they are beginning to repay on the investment. A meeting developed that the coal should be pooled and sold through an agency, thereby enabling the broker to fill orders with coal to suit particular requirements of his trade. In this method it is deemed possible to continue to operate the numerous mines of this section, both wagon and tipple."

The matter was referred to Mr. Street for his opinion, which is published below for the benefit of others who are interested in the subject of joint sales agencies.

AN EXAMINATION of the law reports convinces me that the best advice that can be given at long range and in the brief time available for research, is to proceed with extreme caution in the creation of any joint selling agency and to act under the direct assistance of counsel.

So far as I am able to ascertain from a view of the adjudicated cases, arrangements of this kind in the coal industry have been uniformly frowned down by the courts as being violative of the anti-trust laws.

If the plan mentioned by your correspondent will involve a suppression of full competition between the members of the association as to prices or production, it would doubtless be held by the courts to be invalid as being monopolistic. But whether the public interests would be actually so affected as to result in litigation testing the validity of the pooling arrangement is, of course, conjectural. All that can be said is that during our participation in the war the Federal Government has completely reversed its policy of discouraging combinations of producers. As I heard a prominent business man say the other day, the Government has lately *compelled* violation of the anti-trust statutes as a necessary means of efficiently and economically carrying out war measures. How soon it will be before affairs become so far restored toward normality as to cause a revival of agitations for strict enforcement of the anti-trust laws is not presently apparent.

What Courts Have Held

The judicial law of our subject appears to be comprehended by the several Appellate Court decisions reviewed below, all of which it will be noted are unfavorable to the validity of pools or joint selling agencies sought to be maintained by independent producers controlling a considerable portion of the production of a given district.

In the case of Slaughter vs. Thacker Coal and Coke Co., 55 West Virginia Reports, 642, 47 Southeastern Reporter, 247, it appeared that three of the four coal-mining companies operating on the Thacker vein in Mingo County, West Virginia, organized a corporation for the sole purpose of acting as sales agent for the operating companies, the three mining companies holding nearly all the stock. Each of the three mining companies made a separate contract with the agent corporation providing that the latter should act as the producer's exclusive sales agent, and sell at prices uniform as to all three companies. The corporation was to advertise and introduce the mining companies' product in the markets, establish and control sub-agencies, make all sales and collections, and deduct as its compensation certain tonnage commissions.

Supreme Court States Plan Was Invalid

Defendant, one of the three companies, later refused to be further bound by the arrangements, and in subsequent receivership proceedings against the agent corporation, suit was brought to hold defendant liable as for breach of the joint arrangement.

The Supreme Court of Appeals of the state affirmed a decision of the trial judge, holding that the plan was invalid as involving an unlawful restraint of competition. The following extract from the opinion on appeal shows, first, the individual view held by Mr. Justice Poffenbarger, who wrote the opinion, and, second, the views of his associates who overruled him:

It is impossible to see how the public was, or could have been, injured by this contract. Three small companies, out of the vast number of coal-producing companies in this state, entered into it. The quantity of coal put upon the market by them is an utterly insignificant portion of the vast quantities thrown upon the market by the numerous competing producers. In the absence of some great combination, virtually controlling the production and price of a commodity in the country, the price is regulated and determined by the law of supply and demand. It is manifest that, by this agreement, the production of these three mines was facilitated and increased rather than stifled or curtailed. . . . The validity of this contract must be determined by its practical effect rather than by ascertaining whether it falls within the terms of a legal definition. Contracts in restraint of trade and contracts eliminating competition, as a general proposition, are illegal and void on the ground of public policy. But it is, nevertheless, true that there are numerous contracts which all the courts hold good and which, at the same time, tend, in some degree, to restrain trade and stifle competition. . . .

Upon this view of the contract, my inclination is to hold it legal, but my associates are of a different opinion. Applying the principles hereinafter stated, they consider it void, as against public policy.

". . . The true test of the illegality of the combination being the injury to the public, and whether its necessary consequence is to control prices, limit production, or suppress competition in such way as to restrain trade and create a monopoly. To render the combination illegal on this ground, it is not necessary that evil intent or actual injury be shown, but it is sufficient to know that the inevitable tendency of the act is injurious to the public. . . .

"In some way several corporations competing in production merge into one, and cease competitive production. By means of large capital this new corporation can produce largely, or limit production, lessen supply, enhance prices, and lower the prices of materials used in production."

In the later case of Pocahontas Coke Co. vs. Powhatan Coal and Coke Co., 60 West Virginia Reports,

508, 56 Southeastern Reporter, 478, a similar arrangement for sale of coke produced by about twenty different manufacturers was held to be void, although the purpose of the plan, as stated in the formal contracts, was "to improve conditions in the manufacture, inspection and shipment of coke, and to improve and regulate the quality of coke manufactured in the district."

"We are clearly of the opinion," said the Supreme Court of Appeals, "that it was not necessary, in order to arrange for the improvement of conditions in the manufacture, inspection and shipment of coke . . . for the said corporations to form a trust or combination, the direct effect of which is to destroy all competition among them, to pool their production and to cause them to enter the market for the sale of their combined production as a single concern and which tends to restrain competition between them and others engaged in the same business."

The Pennsylvania Supreme Court adopted about the same line of reasoning in the case of Morris Run Coal Co. vs. Barclay Coal Co., 68 Pennsylvania Reports, 173. In this case it was shown that five coal companies controlling two regions agreed to appoint a committee to take charge of their interests and appoint a general agent. Each producer was to make deliveries on orders of the committee and on the terms and at the prices fixed by the committee.

Responding to a claim that the arrangement was designed "to lessen expenses, to advance the quality of the coal, and to deliver it in the markets it was to supply, in the best order, to the consumer," the Supreme Court said:

> It does not follow that these advantages redeem the contract from the obnoxious effects so strikingly presented by the referee. The important fact is that these companies control this immense coal field; that it is the great source of supply of bituminous coal to the State of New York and large territories westward; that by this contract they control the price of coal in this extensive market, and make it bring sums it would not command if left to the natural laws of trade; that it concerns an article of prime necessity for many uses; that its operation is general in this large region, and affects all who use coal as a fuel; and this is accomplished by a combination of all the companies engaged in this branch of business in the large region where they operate. The combination is wide in scope, general in its influence, and injurious in effects. These being its features, the contract is against public policy, illegal, and therefore void.

Another case in which a coal-pooling arrangement was held to be illegal was United States vs. Chesapeake and Ohio Fuel Co., 115 Federal Reporter, 610, decided by the United States Circuit Court of Appeals. Three individual, three partnership and eight corporate operators bound themselves for five years to deliver all their output to the defendant fuel company. A committee of the operators fixed prices at which the coal should be sold to the fuel company. The company was bound to pay over to the operators the excess of profits on resales above a certain percentage compensating the fuel company. As the contract involved interstate commerce and was found to illegally restrain competition, it was held to violate the Federal anti-trust act.

And it will be remembered that the United States Supreme Court, in 1912, decided in the case of United States vs. Reading Co., 226 United States Reports, 324, that a series of identical contracts between interstate carriers with a great majority of independent coal operators to market all the product of the latter at an agreed percentage of tidewater price, constituting a scheme to control the sale of coal, violated the Sherman Act.

Legal Department

OPERATION OF COMPANY STORES—A merchant has no standing in law to complain of the maintenance by the owner of coke works of a store at which the employees of the works are required to buy their supplies as a condition upon the continuance of their employment; there being no showing that the owner of the coke works was actuated by malice against the complaining merchant in establishing the company store. (Dagostino vs. Rogers, 68 Pennsylvania Superior Court Reports, 284.)

INJURY TO ADJOINING PROPERTY BY MINE DRAINAGE—Discharge of mine water, either by drift or from a lower level by a shaft, does not impose liability upon a coal-mine owner for resulting injury to adjacent property if the injury is not negligently or maliciously inflicted. But the burden is on the operator to show that the natural use of his property which causes the injury complained of is unavoidable except by an expenditure which would substantially deprive him of the use of his property. (Clouse vs. Crow, 68 Pennsylvania Superior Court Reports, 248.)

EMPLOYMENT OF MINORS—A Pennsylvania coal operator who employs a boy in a mine, he being under the age limit fixed by statute for such work, is liable for accidental death of the minor in the employment, regardless of whether the accident be attributable to negligence of the operator. Nor are the parents to be precluded from recovering damages because the father knew the work the boy was doing, and the mother received the wages, if they did not know the boy's exact age until after his death. (Telinko vs. Pittsburgh Coal Co., 68 Pennsylvania Superior Court Reports, 143.)

INJUNCTIONS AGAINST UNLAWFUL STRIKE MEASURES—In 1907, a coal company obtained an injunction against certain unlawful interferences with the company's business in an attempt of the defendants to unionize the mines of the corporation. The injunction was directed, also, to "all other persons whatsoever who may have acquired notice, information, or knowledge of the judgment," etc. It is held by the United States Circuit Court of Appeals, Sixth Circuit, that this decree did not bind persons who were not parties to the suit, and who ten years later took part in another and unrelated strike, although members of the same labor union involved in the first strike. (West Kentucky Coal Co. vs. Tosh, 252 Federal Reporter, 44.)

LIABILITY FOR MALICIOUS PROSECUTION—Affirming a judgment against defendant, awarding damages in favor of plaintiff, for malicious prosecution, instituted by an employee of a detective agency engaged in looking after defendant's interests, it is held by the Virginia Supreme Court of Appeals that to sustain such an action it must be shown that the prosecution was instituted by defendant, and has terminated favorably to plaintiff, that it was instituted without probable cause and with malice. A private detective working for a coal-mining company, and subject to its control, is an "employee" of the company in the sense that the company is liable for malicious prosecution set on foot by him in the course of his work for the company, although he may have been paid for his services by a detective agency which assigned him to the work under the agency's contract with the mining company. It is a good defense to an action of this kind that the defendant acted in good faith and in reliance upon legal advice in starting the prosecution. (Redd vs. Clinchfield Coal Corporation, 96 Southeastern Reporter, 836.)

DEPARTMENT OF HUMAN INTEREST

President Wilson Recognizes Loyal Help of Raleigh Boy Scouts

The Boy Scouts of Raleigh, W. Va., like the other bodies of that up-to-date mining town, is a thriving institution. *Coal Age* has already spoken of the Virginia theater erected by the Raleigh Coal and Coke Co. and of the large number of automobiles that are owned by the employees of the same company (see *Coal Age*, Vol. 9, page 977). The employees of the company have also a mining institute and several bands (see *Coal Age*, Vol. 9, pp. 680 and 681). In earlier years the Boy Scouts formed a less imposing feature of the village, but when the war occurred it gave the boys an opportunity to show their spirit.

During the canvass for the Third Liberty Loan the boys of Raleigh Troop No. 2 were extremely active, and as a reward they succeeded in securing the American flag which was offered in every state by President Wilson to the Boy Scout troop which performed the largest service. They have the flag in a glass case at their troop cabin. It measures 5 x 8 ft. and is of pure silk bordered with a gold fringe. It has a silk cord and tassel. There is also a leather socket and belt for carrying the flag.

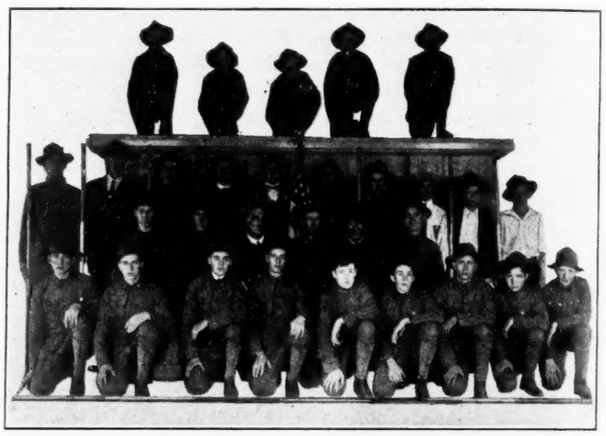
A broad silver band at a joint in the staff has the following inscription: "Presented by the President of the United States of America to Raleigh Troop No. 2 of West Raleigh, W. Va., for distinguished service in the Third Liberty Loan of April, 1918, for State of West Virginia."

The work of the troop was no less remarkable when it undertook the sale of the bonds of the Fourth Liberty

BOY SCOUT CABIN AT RALEIGH, W. VA., MINES

Loan. The boys placed three large subscription clocks in conspicuous places in Raleigh and moved the hands of these clocks daily so that they registered the progress of the drive. One clock showed what was being subscribed by the white people and another the bond purchases of the colored people. A third showed the pledges of the whole people, white and colored. At the close of the campaign the total subscription was found to be $53,250. Of this the white people subscribed $28,000 and the colored people $25,250.

Taking into consideration the fact that the majority of the colored citizens have been at Raleigh less than a year, this subscription by the colored people demon-



BOYS WHO WON PRESIDENT WILSON'S TROPHY

strates that they were equally interested in the great fight for democracy, 135 of them having subscribed this magnificent sum. These good fellows did not stop at the lowest loan procurable, for their subscription averaged, as a little calculation will show, $187.04 per person.

Consolidation Coal Co.'s Subscription to the Fourth Liberty Loan

The employees of the Consolidation Coal Co. subscribed $728,950 to the Fourth Liberty Loan. The Maryland division subscribed $62,500; the West Virginia division, $294,000; the Pennsylvania division, $140,000; the Elkhorn division, $151,200; the Millers Creek division, $55,650, and the Baltimore office, $25,600.

The officials of the company also purchased large amounts, the largest sum subscribed being $105,000. These purchases by officials brought the total subscriptions above the million-dollar mark. In addition to this the company, as a company, bought a million dollars of the loan, making a total for employees, officials and the company of over two million dollars.

The employees subscribed $498,950 more to the fourth loan than to the first, $455,950 more than to the second and $200,100 more than to the third. In all they have subscribed $1,761,700 to the four loans. Each loan has shown an increase, though the ranks were thinned by 12 per cent. of the men entering military service. There are 1282 stars on its service flag, and in its January issue of the *Monthly Magazine* the company had regretfully to record that eight men had made the supreme sacrifice and given up their lives in the service of their much-beloved country.

Director General Hines Sheds Light on Railroad Fuel

With 80 per cent. of its coal requirements covered by existing contracts, the Director General of Railroads has announced that it will be impossible to effect much greater distribution of orders unless operators holding contracts will be willing to abrogate them for the general good. With regard to the matter of better distribution of coal purchases which have been insisted upon by the National Coal Association and by representatives of the United Mine Workers, the Director General said:

Only about one-fourth or a little more of the total bituminous coal production is consumed by the railroads. To a very large extent the mines whose output can actually be used for railroad purposes is restricted on account of the quality of coal needed. A further important point is that at the request and, indeed, at the insistence of the Fuel Administration the Railroad Administration has made contracts for a large part of its coal with the result that only about 20 per cent. of the coal used by the Railroad Administration is not covered by contract. Naturally the contract coal cannot be modified except with the consent of the operators.

The only other possibility that occurs to me is that if the operators with whom we have made contracts for about 80 per cent. of the coal are willing to release us from those contracts, we will be glad to distribute that coal among the various mines which can produce the necessary quality of coal and which will be willing to sell at the same prices we have under the contracts.

Some time ago our attention was called to the fact that there was a concentration of orders for the Railroad Administration in certain fields so as to leave other fields without orders. We promptly met this situation by giving instructions that coal should be bought as far as possible by each railroad on its own railroad.

With regard to giving publicity to bids the Director General has ordered that "any prices which are established will be available to representatives of the miners or others who may be interested and who may request the information, both as to prices and as to the names of the sellers."

So as to be clear of any charge of trying to force down wages, the Director General has provided that purchasing agents must not suggest any prices to operators and must stipulate that purchases are to be based on existing wages.

After promising that withdrawal of coal from storage would be diminshed, Director General Hines said:

The very large amount of storage coal which the railroads have accumulated was accumulated at the request of the Fuel Administration, and while we are endeavoring to use this storage coal in such a way as not to embarrass the situation, the fact remains that the coal is there and must be consumed.

The National Coal Association, which has been one of the principal parties to the controversy, accepts the ruling of the Director General as satisfactory. The Association has been contending that all bids should be opened at a given time and place in the presence of the coal operators interested. It is regarded as very likely that the Railroad Administration will go a step further and allow that procedure to be adopted. J. D. A. Morrow, the secretary of the National Coal Association, is outspoken in his commendation of the spirit of fair play which has actuated the Railroad Administration officials, throughout the entire discussion.

Pooling of Freight Equipment Proved To Be a Good Measure

Pooling of freight equipment has been accompanied by such success as to make a return to the old methods of car distribution unthinkable. This opinion was expressed by E. H. Degroot, Jr., assistant manager of the car-service section of the Railroad Administration. He expands his thought in this connection as follows:

So far as the work of the car service section is concerned, it should be possible to forecast the future with some degree of accuracy. For example, the common use of freight equipment under centralized control has proved so successful that a return to the old individualistic methods of car distribution is unthinkable, and the car service section or some other agency with plenary powers will undoubtedly have to continue to supervise and control the relocation of freight cars indefinitely.

Many of the responsibilities of the commission on car service in the days before the United States entered the war, and prior to the creation of such war organizations as the Fuel Administration, Food Administration, War Industries Board, etc., bid fair to become again problems of the car service section with the passing of those organizations, and as the transportation requirements of the post-war period of reconstruction develop. In short, for the car service section, the signing of the armistice promises to change the form of some of the questions which must be answered and to superimpose others which cannot be disposed of within any definite period which it is now possible to foresee.

Now I believe that one thought which your president had in mind when he said, "We want to keep the good things that have been developed," was that you would want to have a share in further developing these things in the days to come, and so I shall close with a few brief suggestions along that line. As shippers you can help by (a) ordering cars only as actually required; (b) loading them promptly; (c) loading them to journal or to cubical capacity, as the case may be; (d) tendering shipping instructions early;

(e) billing the freight (as far as is possible) direct to destination and to the final consignee; and (f) transmitting bills of lading promptly for all order shipments, making sure that consignees are given necessary information to permit expeditious handling.

As consignees you can contribute to this good work by (a) accepting freight promptly and, when switching orders are necessary, placing them in advance of the arrival of cars if possible, taking up bills of lading without delay in all cases where they are involved; (b) unloading cars as early as possible without taking advantage of free time allowances; and (c) advising agents as soon as cars are released.

Discusses Coal Provisions of the Oil-Land Leasing Bill

While principal interest surrounds the oil features of the so-called oil-land leasing bill, the coal provisions of that measure came in for frequent controversy during the discussion of the conference report in each House of Congress. Senator Pittman, in the course of debate, made the following statements with regard to the coal provision:

The bill provides that any citizen of the United States may acquire either by purchase or by lease not to exceed 2560 acres of coal land. That is the provision. Now, if it is acquired under lease it is acquired under the general provisions of the bill. If it is acquired by purchase he must designate the tract of land, and it must be advertised and published and put up to public competition. After the price and value have been fixed by competitive bidding, then the Secretary of the Interior decides whether he will accept any of the bids or not. If the Secretary of the Interior is honest, then the Government will get the full price of the coal land. But Mr. Pinchot says it will not buy coal lands because people would rather lease them. But if they do buy it, then it is on a value determined by competitive bidding, and even after the price fixed by competitive bidding the Secretary of the Interior can say, "I do not consider that fair to the Government and I will not take it." It all depends on the honesty of your administrative officers, both as to the leasing provisions and as to the sale provisions.

But that is not all. There is not a stockholder in one of the big coal companies in this country who can acquire a lease or title to a foot of coal land under this bill. There is not a man who is interested as a stockholder in any other corporation or as an individual in any other coal in the country in excess of 2560 acres of land who can become a lessee or a purchaser under this bill. Where does your monopoly come from? How can you possibly monopolize 40,000,000 acres of coal land under such a provision? I tell you the object of the bill is to fight the monopoly.

Regulation Suspended on Tidewater Shipments and Reconsignments of Coal

Reconsignments of coal now may be made without restrictions. Operators shipping to tidewater are no longer required to consign their coal to the Tidewater Exchange. A formal order making possible the return to pre-war conditions in the two particulars mentioned above was issued Feb. 22 to become effective Feb. 28. The Fuel Administration calls attention to the fact that voluntary arrangements to operate through the Tidewater Exchange are in no way interfered with by the order.

Exports of fuel during the latter half of 1918, according to the Exports Control Committee, averaged 165,255 tons per month.

Commission from United States to Observe Rehabilitation of French Mines

The Bureau of Mines commission which will spend several months in Europe observing the engineering practice in reopening the destroyed mines of France sailed from New York Feb. 15. The commission consists of George S. Rice, the chief mining engineer of the bureau; F. G. Cottrell, the chief metallurgist, and F. R. Probert, one of the bureau's mining engineers.

Warns Against Use of Army Gas Masks in the Coal Mines

Fearing that returned soldiers will attempt to make use of the army gas masks in coal mines or other places where poison gas may have accumulated, Director Manning of the Bureau of Mines makes the following statement: "The army gas mask should never be used in mines, because of the uncertainty that exists as to the amounts of gases in the atmosphere and the liability of there being insufficient oxygen to support life. Its use in the mines will lead to serious accidents and fatalities."

Toledo, Ohio, has been eliminated as a rate basing point for coal shipments. An order by the Director General of Railroads points out that no coal is produced at Toledo and makes unnecessary the Toledo coal tariff.

Conclusions of the Senate Committee on Manufactures, in regard to the coal situation, will be submitted to the Senate before the close of the session on Mar. 4, it has been announced. A. B. Jessup, Percy Madeira and A. C. Dodson appeared before the committee Feb. 18 to make supplemental statements. Members of the committee are already at work on the report.

Colliery Notes

In general, too much stress is said to be attributed to the advantages of pulverized coal, regardless of its manner of burning, and overlooking the operating difficulties. A wide range of choice is possible in regard to the equipment for drying and pulverizing, as the development of such machinery has been encouraged many years by the cement industry. It is thought that the real problems connected with the use of pulverized fuel are those of properly handling, feeding and burning it.

In a discussion about the smoke produced by byproduct coke ovens, W. H. Blauvelt stated at a recent meeting of the American Institute of Mining Engineers that it was made almost entirely during the time of charging the ovens; at that time the ovens are cut off from the hydraulic main. The amount of smoke that escapes at this time is extremely small compared with the amount produced by a beehive plant; the mechanical difficulties in preventing any escape of smoke at charging time are considerable. However, several devices are in operation at a number of plants which collect most of the smoke made during charging, and several devices are being worked on for its complete elimination. These will probably be employed only where the smoke is objectionable on account of the location of the plants, as the value of the byproducts in this smoke is quite small.

EDITORIALS

Mule Versus Motor

THERE are some who will be sorry to see the original motive power of the coal mine—the old mine mule—disappear. They will, however, be few and far between; and certainly the "skinner" will not be among them. There is little doubt that he will relinquish his mule in favor of the more inanimate but docile motor with a sigh of relief.

The mining reports for the State of Illinois give some interesting statistics showing the decline in the use of animal haulage and the simultaneous increase in motor haulage. In the year 1900 there were 512 mines in which animal haulage was used, and in 1917 there were only 113; electricity was used at only seven mines in 1900, and at an even 200 mines in 1917.

In 1900 the tonnage handled by the mine mule was about fifteen times as great as that handled by the electric motor, and perhaps it was little thought that the former would meet his Waterloo only ten years later. But in 1910 we find that mine motors in Illinois handled 23 million tons of coal as compared with 21 million hauled by mine mule. From this time on the tonnages handled by the two methods have spread rapidly apart, until in 1917 the mine motors are credited with 67 million tons as compared with less than 9½ million tons by animal haulage.

The result in other states, with similar haulage conditions is much the same. No better proof, perhaps, could be put forward of the phenomenal development of mechanical equipment in the mining regions. The handwriting is on the wall, and the operator who fails to put his plant on the most economical operating basis possible will some day find himself facing prohibitive mining costs.

It is to be hoped that the United States will get her full share of international trade, but whether she ranks first, second or even third in the matter of the world's financing is less important than that she make good in her effort to humanize the work of reconstruction and extend throughout the world her disinterested ideals.

New England Seeks Freedom of the Seas

WHILE the Shipping Board diligently plans for a plebiscite to determine the future policy of the American merchant marine, it is much to be hoped it will not overlook the present high freight rates on the Atlantic Seaboard; for the situation is one crying for immediate correction. That the high rates still prevailing on coal shipped northward from Hampton Roads and Baltimore have not had disastrous effects on industrial conditions in Boston has been due to the fact that when the war ended Boston had on hand an abnormally heavy tonnage of coal.

Figuratively speaking, since that time Boston has been leisurely "Fletcherizing" the cud and doing it with more than usual care; for the cud was delivered to Boston at a war figure, and, being bought at a cost higher than Boston had ever paid before, it has been utilized with more than ordinary care. Before the season is far advanced Boston will be looking for fuel and wondering why it cannot be shipped at a lower cost.

It is true there are a number of wood steamers that have been built as a part of the emergency program, and these could be used for the transportation of coal were not these and certain small steel vessels lacking in carrying capacity and so uneconomical in operation. This is generally acknowledged by trade and governmental authorities alike. Such vessels must find their place, if place there be, elsewhere.

What the coastwise people want, and what they must have, are the large steel colliers that were withdrawn for oversea transport last year to meet an actual need. That being the case, a thorough canvass should be made at as early a date as possible to determine what ships of 5000 tons and upward can be restored to the trade, for only such ships can meet the conditions competitively. An 8000-ton ship takes no more officers and only a few more seamen than a 3000-ton ship. Therefore only ships of the large size can transport coal at a low price.

While the war lasted it was imperative to reserve as much space as possible for Government shipments. It was necessary also to maintain coastwise rates at a point high enough to keep neutral vessels, and vessels built at high cost, in operation. The war is now to all intents and purposes over, and with it have largely ended the necessities just detailed. The neutral ships have departed, and the new steamers constructed on the Great Lakes are tied up in Atlantic ports without orders and without even railroad requisitions to keep them going. Despite this change in conditions, rates remain unchanged at the level established in April, 1918.

This posture of shipping matters causes the New England manufacturers much apprehension, as will be seen after a little consideration. As an example, a large power plant has been constructed at tidewater so as to obtain cheaply transported fuel. It has established business inland on the ground of cheapness of the water-borne fuel with which the power plant is provided.

Today the lowest rate by steamer is $3.65 from Baltimore or approximately $5.50 from the mines. The all-rail rate from central Pennsylvania is $3.75. Thus there is a differential of $1.75 per gross ton, right at the tidewater destination. This tidewater plant has power sold inland to stations where rail coal is easily accessible. Fortunately, each contract for power has a coal clause so that the extra cost of water-borne coal falls on the inland user as well as on the plants nearer tidewater. But the high cost of power is giving the client much

dissatisfaction. He feels that with rail-borne coal he could produce the current himself at less cost than he can buy it of the concern with which he has a contract. In any event, the tidewater power plant has not the advantage it sought in establishing itself along the coast.

Steamers owned by coal shippers are actually tied up because the rate of freight set by the Shipping Board is not merely a maximum rate, as was the price of coal recently set by the Government, but a mandatory rate, not to be deviated from upward or downward, and applicable to all steamers requisitioned by the Board in 1917; namely, to all those being of 2500 tons deadweight and upward.

This classification covers practically every steamer in the coastwise coal trade, so not a single shipowner is free to charter his boat at a penny less than the mandatory rate. Not only is this true, but furthermore a big tonnage has been operated largely through an office maintained by the Emergency Fleet Corporation. Barge rates were kept high to accord with those charged for boat tonnage. The barges could have been chartered at lower rates if the chartering had been done in an open market. Even those high in authority little understood the problem faced by tidewater coal users, but New England will have to make it understood if action is not soon taken.

It has been felt in trade circles that an adjustment of the railroad fuel problem would help clarify the status of coastwise shipping, because so large a proportion of railroad supply coal in New England has normally been shipped by water; but unless there is some coördination in the next few months between the two means of transportation, we shall experience difficulties far more serious than those we are now going through. Will not some capable man or body of men, in the Interstate Commerce Commission, or elsewhere, step forward and show some real grasp of this business of freighting coal?

Men, when they strike, do not strike so much against their employer as against the rest of mankind. Increased wages must inevitably come out of the pockets of consumers (all human beings are consumers) or out of profits. If they come out of profits, business is starved and becomes unprogressive and inefficient, and may even be destroyed as have been the railroads. Many of the street-car lines, owing to strikes, have been put out of business. A strike against mankind is justified only when the men striking are receiving a lower relative wage scale than their work and talent merit.

Why Doesn't the Consumer Get Busy?

CONSUMERS are the most futile of persons. They are always disposed to support any move for an increase in wages. When the increase is granted and costs rise in accordance, they are then extremely wrath that they have been bitten. They blame, however, the man that pays the larger wages and not the man who compels their payment. The consumer, like a child, puts his finger in the flame and wonders why it burns him and not somebody else.

There was a time when there were no labor unions or when labor unions were purely local things, and operators of coal mines could lower wage scales individually or locally and make a profit in so doing. In that period, long removed, so much removed as to be almost historic, it paid the operator to fight for low wages. At that time it became ingrained in the genus operator to resist the workman seeking an increase. It became a second nature, a nature so strong that the same spirit rules even though conditions have changed immensely, and the operator has now little or no reason for resistance.

Today unionism is not local. It is national, and the operator must everywhere pay the scale. The only questions are: Does the wage advance hit every producer equally? and "Can he pass it on to the public? Increases in mine wages do usually hit every producer in any industry almost equally. In steeply pitching measures where mining is unusually expensive, there is a difference in cost which is important, making wage increases naturally discriminatory and locally oppressive of the operator. But in general the operator is not moved by reason in opposing an increase, for surely the answer to the second question is that he can pass the increase in wage on to the public, wherever conditions are equal.

The average producer has now no cause for resistance. Let us hope he will never realize that conditions have changed so markedly that resistance to wage demands is merely patriotic and philanthropic and not a measure of self defense. Let us hope consideration does not drive that conclusion in on him, for he is moved so little, under normal conditions by patriotism and philanthropy that he will let his employees burden the public with high costs without any resistance whatever. Fortunately all the latent conservatism, and all the memories of bitter struggles when to win meant abounding profit and when loss meant impending gain makes a cave man out of the coal operator and he fights heroically for what he thinks is his own interest, but which is really the sole interest of the consumer. Meanwhile the consumer tries to trip him up. He brings pressure in every way to induce the operator to give up his battle.

Of course, there are wage battles in which the consuming public should take sympathetic interest, where, for instance, men are trying to get a percentage increase in proportion to their past wages equal to that already granted a large percentage of workmen. Labor unions will be excused if they look sympathetically on such struggles. But to aid all strikes, thinking it is helping the cause of labor, is a plain folly. The workman is a consumer. He is interested in seeking a lower wage for every other workman outside his family. Still, of course, as an honorable man, he will have no objection but rather a pleasure in seeing every good workman get a fair wage whether by striking or without such labor disturbance.

Some day the consumer is going to take a hand in preventing uncalled-for wage increases as unfair and unbalancing of labor conditions. We are all paying the wages of one another when we buy necessities and luxuries. We are all consumers. In so far as we are consumers, we are interested in keeping down the wages of production to a fair figure. We must not neglect that duty. We must not blame the employer if he does not perform it for us. It is the consumer's duty. Why, then, doesn't the consumer get busy?

THE LABOR SITUATION

EDITED BY R. DAWSON HALL

General Labor Review

Labor matters are simmering gently. However, a little disposition seems to exist to ask the Government to take charge of the mines, but really the feeling is not strong. A Government that in some instances takes months to report casualties and pay soldiers' wages, to mention two matters only, is not likely to regulate business any better than it is now regulated.

The Government was the cause of the present overproduction of the coal. It is not at all to be blamed for it, of course. It is to its credit that it boosted production and made storage possible. But rightly or wrongly (it makes no difference which), it made this present condition and it would have made it had there been Government production rather than Government control.

If the people will not buy, even the Government will not produce coal indefinitely. If the coal is mined and stored in large quantities at one place it will catch fire and burn. After all, not all the idleness is at mines. The trouble is that the people will not buy. Will the Government compel the individual to buy against his will? The miner will say the public can be compelled to buy coal, but he will not readily admit that it can be required to buy a host of other things which could be made by people that are idle.

The public is like a child looking out at a rainy day. Almost the only course is to let it rain. An umbrella may be provided to shield us against some of the rain's violence, but on the whole what can we do to adequately meet the phenomenon? Why look to the Government? It has been slower than all other agencies since the war. It has shown less resilience than the average employer of labor.

The United Mine Workers of District No. 9 meeting at Kulpmont in the anthracite region feel that the Government should take the mines over. The men in Illinois have voiced the same idea. But it is not clear that it would lighten the burden at all and it is certain that leaving the affairs of the nation in the hands of one or a dozen men would not make for such efficiency as the present distribution of responsibility.

Board Gives Labor Favorable Decisions

After hearings covering several days Special Umpire Allison O. Smith, representing the United States Fuel Administration, rendered on Feb. 1 several decisions regarding matters long in controversy between the miners and operators of the New River and Winding Gulf fields. These points at issue were first presented to Judge Smith in December.

As to the increase in pay of monthly men he ruled that it should apply for every day worked, whether 25 or 31 days in the month. In the case of the employees of the Rayland Coal Co., who claimed that no allowance for yardage had been given them though it was stipulated in a contract with the company, Judge Smith gave his decision in favor of the employees. The discharge claim of D. L. Campbell against the Turkey Knob Coal and Coke Co. was settled by an agreement that the man should be reëmployed but that he should not be compensated for any time lost.

Further depositions were requested in a case growing out of a strike among the employees of the Elkhorn Piney Coal Mining Co., at Stannaford in Raleigh County. The employees of the company charge that the concern has not been living up to a decision previously given.

The statement made by the operators at the Feb. 1 meeting exhibits just how they regard the demand of the men for a new wage scale in the New River and Winding Gulf districts:

"Relative to your request for a conference at White Sulphur, W. Va., on or about Feb. 1, we desire to say that the New River and Winding Gulf Operators' Associations are of the opinion, and have so decided, that the United States Fuel Administration has heretofore, at what is known as the 'Washington Wage Conference' held at Washington, D. C., on Nov. 1, 1917, settled, for the period of the war, or until the peace treaty is signed, and possibly until April, 1920, the wage that should be paid our employees, thus rendering a conference between our employees and ourselves relative to wages unnecessary.

"The ruling of the fuel administration made at the 'Washington Wage Conference' is still in force and effect, and inasmuch as the ruling or order was accepted, adopted and acted upon by all the parties concerned, that is, the employees and employer alike, it became binding and by virtue of such adoption superseded the contract then in force between our employees and ourselves. In view of the status so fixed and determined by the Fuel Administration as hereinbefore mentioned, we have decided that we have no right to change the same during the time that such ruling, as heretofore announced, is effective."

With Peace Will Aliens Come or Go?

Although the operators in the Connellsville coke region have to learn what the Federal Congress or the Peace Congress may decide as to emigration or immigration, they are giving serious attention to the prospects of a general exodus of foreign-born mine and coke workers to Europe. The effect of an unlimited immigration program upon the labor situation in the region is also being studied.

Those, however, who have examined the matter most closely seem to be of the opinion that there will be no material exodus. They argue that should governmental restriction not prevent migration to Europe, the high taxation which will exist on that continent as a result of the war, possibly also the low wages and the unfavorable living conditions will discourage many of the foreign-born workers in the region from planning any extended stay in Europe, though some may make a short visit. Another factor is that the foreign-born worker, fearful of banks, has invested heavily in property in the Connellsville region and in federal securities which in many cases cannot be converted quickly into ready cash without a loss. The alien is usually a canny proposition in such money affairs.

It is believed that the more serious danger lies in an exodus of workers into the region. Of this there are prospects. Since the war began the aliens in America have learned more than ever the advantages of living in the United States and as their letters to relatives abroad have detailed their prosperity the war may easily result in a larger immigration than ever before.

Russians Not Coming to Western Canada

Considerable feeling has existed in some British Columbia and Alberta coal-mining centers relative to a report that operators were arranging to import Russian coal miners in order to permit of the fullest possible development of the mines. The rumor was denied, but it persisted, and as far back as Dec. 10 an inquiry was made by W. F. McNeill, Calgary, Alta., of the Department of Labor, at Ottawa, with the result that G. D. Robertson, Minister of Labor, sent the following explanatory letter flatly refuting the statement:

"In reply to your letter of Dec. 10 would say that, on Nov. 11, the department received notice to the effect that

the Canadian Pacific Railway Co. was negotiating with the Western Coal Operators' Association in regard to the importation of 400 Russian miners despite the fact that several of the Western mines through lack of orders were not then working to full capacity. My wire of Nov. 11 states that inquiry was immediately made in regard to the supply and demand for miners. That inquiry confirmed the statement that the mines were not fully occupied through lack of orders and that there was no necessity for importing miners from Russia.

"The Canadian Pacific Railway Co. was accordingly asked to discontinue any negotiations of this character. Subsequently the railway company advised that no negotiations had been in progress, which fact was later substantiated from other sources. Your letter indicates that an utterly incorrect interpretation was placed upon the telegrams exchanged."

Canadian Mine Worker Soldiers Resent Presence of Well-Paid Aliens

The Legislature of British Columbia has recently adopted a resolution advocating that all enemy aliens be deported from Canada and that the Canadian Government should be careful to retain full control of immigration to the Dominion, whatever other concessions may be granted at the Peace Conference.

The debate on this subject was of special interest to the coal miners and the workers of all industrial sections of British Columbia, but it was followed with particular keenness by the miners of Vancouver Island coal areas because the employment of aliens in the mines has for years been resented by the English-speaking classes of these sections. William Sloan, Minister of Mines, who is the representative of the latter districts in the House, spoke strongly in their behalf, supporting the proposal that the Dominion Government should be asked to deport all enemy aliens and moving an amendment to the effect that "Canada's representatives at the Peace Conference be asked to adhere firmly to the principle that Canada shall always exercise full control over immigration to the Dominion."

He not only wanted aliens put out of the country but wished to be sure that, once out, they would be kept out. This was a matter, he said, of primary interest to his constituents. The coal miners of the island, and in fact of the whole of the Province, had furnished considerable quotas to the Canadian Army. Their war record, as to fighting men provided and in every other respect was one of which they were proud. Now those who had gone were coming back to find, in many instances, that while they fought for their country at $1.10 a day, aliens had been filling their places at home at high rates of pay.

Their demand was that all enemy aliens should be returned whence they came, and their places filled by returned soldiers as far as possible and where this was not possible by British subjects. Recent statements indicated that the whole question of immigration was to be discussed at the Peace Conference. It was possible that, at such an international conference, some of the delegates developed a disposition to make concessions. He felt that Canada should not surrender in the slightest degree the principle that her Government control the character of the tide of immigration which was bound to flow from the mixed populations of Europe and Asia.

Canadians Will Make a New Wage Contract

The result of the election of officers of the United Mineworkers of America in District 18, which includes eastern British Columbia and the Province of Alberta, has recently been announced. In the contest for the presidency P. M. Christopher, of Blairmore, has defeated David Rees, of Vancouver, B. C., by a majority of 1486 votes. Alexander McFegan, of Brule, Alta., defeated William Dickenson, of Fernie, B. C., by 1100 votes for the vice-presidency. In the election of auditor G. Christie, of Bellevue, defeated William Potter, of Fernie, by 528 votes.

A second election had to be held before the offices indicated were filled, as the constitution requires that every officer must have over 50 per cent. of the votes cast and, in each case there were originally more than two candidates in the field. These officers will be installed Mar. 1, probably at the conclusion of the annual district convention. The newly-elected officers will be charged with the conduct of negotiations for the renewal of the working agreement with the Western Coal Operators' Association, which agreement expires on Mar. 31 next.

Want Political Prisoners Freed

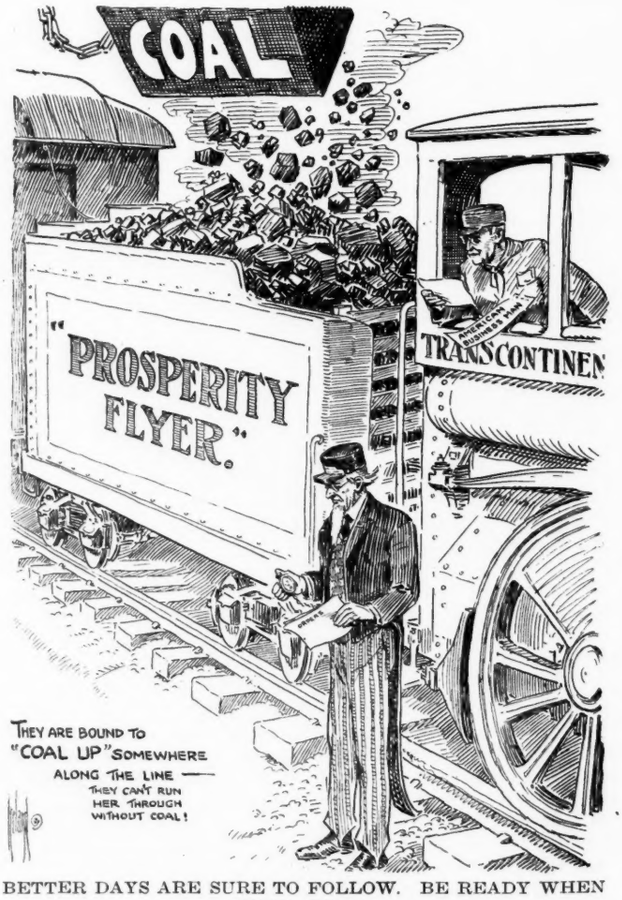
The local unions of Carbondale and Coleman, Alta., Canada, which are affiliated with the United Mine Workers of America, have passed the following resolution:

"We indorse the action taken by the Alberta Federation of Labor Convention at Medicine Hat, demanding the release of all political prisoners incarcerated during the war and are ready to fall in line with any action the Executive of the Alberta Federation of Labor may take, no matter how drastic, to attain that end."

In particular much resentment is shown to the arrest and conviction of Thomas Shannon, secretary for the Diamond City local, near Lethbridge, Alberta, on the charge of having in his possession banned literature and other correspondence in connection with the local. The men argue that if the action taken against Shannon were to become general the secretaries of all unions would be placed in a precarious position and liable to arrest at any time.

The following resolution was carried:

"It is unanimously resolved that we urge upon all locals in the district to take immediate action in this matter, fix a date as early as possible, and all cease work until Brother Tom Shannon is released from prison."


COAL
"PROSPERITY FLYER."
TRANSCONTINEN
THEY ARE BOUND TO "COAL UP" SOMEWHERE ALONG THE LINE —
THEY CAN'T RUN HER THROUGH WITHOUT COAL!

BETTER DAYS ARE SURE TO FOLLOW. BE READY WHEN THEY COME

Courtesy of "Retail Coalman"

Turn About Is Fair Play

Miner—Give me some more, Columbia, me good lady, and a little for the other boarders, too?
Columbia—No more for you my friend. We can't keep any star boarders here. Already you have the share of the other boarders.

Every man is both worker and consumer. A worker in one industry is a consumer in another. When one group of workers gets increased wages, the other groups have to pay more for the goods produced by the first group. Mine workers' wages have risen more largely than the wages of bricklayers, stone masons, carpenters, teachers and others. These people have to pay the mine workers' wages, and they think they ought to make the mine workers pay them more before they are asked to pay the mine workers more. Remember the workers in many industries are getting but little more than before the war and they are entitled to first consideration.

DISCUSSION BY READERS

Coal, Railroads and the Government

Letter No. 1—The proposition presented by the Foreword, in *Coal Age*, Jan. 23, is an interesting one and, as stated, underlies, in a great measure, the future prosperity of the coal industry in this country. The question of the ultimate effect of government control of the railroads on the marketing coal is one that is beset with many possibilities. It is my opinion, however, that the action of the Government in taking over the railroads will prove a benefit to the coal industry.

Investigation by the Government into the conditions that hampered the production of coal revealed the influence exerted by the railroads, who controlled the distribution of the product of the mines in an unfair manner. Such was the condition that it became necessary for the Government to take a hand and assume the responsibility of railroad transportation and management. My belief is that, from the lessons then learned, the Government will not permit the coal industry to suffer a repetition of those influences that held it in restraint at that time.

The crisis brought about by the war furnished the chief reason for the Government assuming the control of the railroads, in order to bring about a more equitable distribution of car supply at the mines, establish a suitable zoning system for the marketing of the coal produced, and in other ways relieve the serious fuel situation that then existed.

Railroad Influence Restricts Coal Industry

Judging from the information available, it would appear that the railroad companies have never done anything to improve the coal business. Their action in buying large quantities of coal at the mines, at their own price, has been most unfair, especially to the smaller operators. The effect has been to injure the business.

It was, previously, in the power of the railroads to control the supply of cars to the mines to their own advantage. The resulting car shortages prevented many operators from meeting their coal contracts. It is my hope and belief that government ownership will eliminate these conditions and establish a more equitable basis for the marketing of coal than has hitherto existed.

Even when the Government fixed a maximum price, per ton of coal at the mines, the railroad companies claimed that a special price should be made to them, owing to the large consumption of coal in the operation of their engines. This and other questions of similar import must be settled by the Government, in their administration of railroad matters.

While there are many Government reforms necessary to be made, before one can say positively that Government ownership of railroads will be successful, there is scarcely a doubt but that such ownership will prove a benefit to a large number of coal operators.

It will be well for operators to consider carefully how this action of the Government is going to affect their business, and prepare to meet the problems that will be presented under the changed conditions, with a view to counteracting any injustice that might otherwise inadvertently fall to their lot. W. H. Luxton.

Linton, Ind.

Effect of Prohibition in Mining

Letter No. 2—From numerous letters that have appeared recently, in *Coal Age*, discussing the many hindrances to coal production, it seems to be the general opinion that the use of intoxicating drinks was the greatest hindrance. Most of these letters came from writers in wet states; but, even in this dry state of West Virginia, the intemperance of miners is a distressing problem to the coal industry.

Time was when every thatched roof sheltered at least one jug, even at the expense of the loaf of bread; and the song commonly sung was,

> "Father, Oh Father, come home with me now,
> The clock in the steeple strikes one."

A Sunday, then, seldom passed without its cutting or shooting scrape; a wife driven from her home and a general assortment of broken bones, cut faces, bleeding noses, torn clothing, shattered dishes, and domestic broils too numerous to mention.

Mondays were days to be dreaded by the coal operators. Few men showed up at the mine and those that did might just as well have stayed at home, so far as their ability to work was concerned. It was no uncommon thing for a mine superintendent to go to the house of every man who failed to appear at the mine and drag him from under a bed or from a closet in which he was hiding and compel him to go to work.

Effect of State Prohibition

Such, more or less, were the conditions in West Virginia mining camps when the state went dry. Then, for a time, there was a marked improvement; but, unfortunately, this section is as a small desert surrounded by three wet oases, as it were. Following each payday, a large proportion of the mining population of the district visits some near-by town in Ohio, Pennsylvania, or Maryland, in the fond hope of bringing with them on their return what the state law has prohibited here. At times, they "get by"; but more often the assumed innocent expression and nonchalent air, ludicrous to the onlooker who knows their habits and ways, betrays them to the authorities, and they are locked up and their recent purchases confiscated.

Another feature of state prohibition is the resulting home manufacture of what the foreign element fondly call "light wine." From its effects, the appellation given to this beverage seems to refer more to the head of the drinker than to the drink. The man becomes fairly crazed and his utterances are as ridiculous as

the fantastic performances he executes when under the influence of this drink. In one instance, the drinker tore up his parlor carpet; and, then, not satisfied with that took from its hiding his savings of several months and staked them at a game, which he lost in less time than it takes to tell it.

This "light wine" is made every fall by the French, Italian, Austrian and Hungarian elements. They do this with the same regularity that the housewife performs her summer canning of fruits and vegetables. They manufacture several hundred quarts for home consumption alone, and often more for outsiders. In one house in the Morgantown district, the authorities found and seized several thousand gallons of this wine. The drinker will seldom tell the name of the one who sold him the drink or say where he procured the beverage.

Today, this country is waiting with impatience to see the effect of nation-wide prohibition on mining conditions. The fear is often expressed that something bad or worse will be found to take the place of that which is lost. The coal industry must wait and hope for the best. M. P. H.

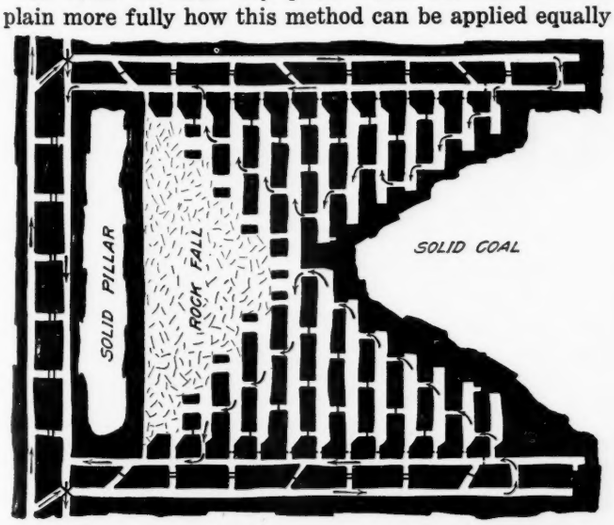
Rosemont, W. Va.

Drawing Pillars in Machine Mining

Letter No. 5—It pleased me much to see the method that I described for drawing pillars in machine mining appear in *Coal Age*, Feb. 6, p. 288. However, I am afraid that I did not make myself clear in regard to the method of attacking the pillars, since the figure given on page 288 shows that they are being cut on the side toward the falls.

That is wrong, as when a fall occurs from the drawing of the last pillar it will generally extend clear across the room and make it impossible to draw the next pillar from that side. The cut must therefore be started on the opposite side of the pillar from the falls.

In order to make my point more clear and to explain more fully how this method can be applied equally



DRAWING PILLARS IN THE ADVANCING SYSTEM

well when rooms are turned off two pairs of headings and driven to meet each other, I have prepared the accompanying sketch showing such an arrangement. It will be observed that the circulation here shown is suited to a gaseous mine, the intake air being conducted to the face of the crossheadings, where it enters the last room turned and passes back over the working faces of all the rooms before reaching the gob section where pillars are being drawn.

This plan not only provides for the ventilation of the working faces with fresh air and carries the gases generated in the pillar workings directly into the return airway; but, by advancing the crossover so as to keep pace with the pillar workings, all the coal from the rooms can be hauled out on the intake air. If desired, the coal from the pillar workings can be back-switched when the crossover to the intake is carried further forward. As fast as the ribs in the rooms are drawn, the section of road on the return airway is abandoned and the track lifted.

Pillars Attacked on Side Opposite to Falls

The plan shown in the figure is the advancing system of mining, which gives an early development of the coal. It will be observed that all the pillars are attacked, in the manner previously described, on the side opposite to the falls, which is the particular feature to which I desired here to draw attention. In the figure are shown thirteen places turned; one rib has been drawn back and is finished, while four other ribs are being drawn. Work on the sixth rib will soon be started at the face of room No. 7, which is just finished. The remaining six rooms are still working on each pair of entries.

When the entries have been been driven up and the rooms and ribs all drawn between the two pairs of headings that are shown in the figure, the work of retreating is started by turning rooms on the other side of these entries and working them back on the retreating system, after the same manner as has just been described in respect to the advancing system.

As the work progresses and the pillars between the rooms are drawn back, the entry stumps and chain pillars are taken out by the same system of retreating. Less and less difficulty will be found with the breaking of the roof, as the face over which the roof pressure is exerted is increased by the extraction of the coal, becoming practically double what it was previously. This will insure good roof falls and lessen the danger of a creep developing. D. F. M.

Meadow Lands, Penn.

Letter No. 6—I was much interested in reading the practical question of "Operator," *Coal Age*, Jan. 2, p. 32, asking for information in regard to the best method of drawing pillars in machine mining. Kindly permit me to give a little of my own experience.

In the coal mines of Australia, where I was formerly employed, conditions are more adapted to the use of machines than is generally the case in the mines of British Columbia where I am now working. However, I believe there are many localities here where machine mining could be employed to advantage, particularly as this system does not require a practical knowledge of mining coal, on the part of the man running the machine. He must, however, be able to operate a machine properly and keep things running regularly and systematically.

In machine mining, where pillars are to be drawn, the safest plan to adopt, in my opinion, is the following:

In British Columbia, the law requires that both the machine runner, who must be a practical man, and his helper must have a miner's certificate of competency. These two men will be able to handle, say four places and make a 5-yd. cut in each place, in a single shift of 8 hours.

Now, assuming the working places are double, the machine runner and his helper first make a cut, say in No. 1 left. When this is finished, the runner transfers his machine to No. 1 right, where he makes another cut. When that is finished, he takes his machine around to No. 2 bord or chamber and repeats the operation there, first making a cut in No. 2 left and then transferring his machine and making another cut in No. 2 right.

In the meantime, two loaders have started to load the coal that has been drilled and blasted by the miners working in these places. The work of loading is started in No. 1 left, the loaders following the machine and loading out the coal as quickly as it is blasted. There are also two practical timbermen, who do what timbering is necessary for the proper support of the roof, for the protection of the machinemen and loaders, so that each place will be ready for the machine to make another cut on its return.

A thin strip of coal is always left on the gob side when cutting through the rib. This is necessary to protect the machine and the men until that lift is finished. When a lift is finished, two practical miners are employed, at the current tonnage rate, to dig out the strip of coal left by the machine.

Success in Pillar Work Depends on Numerous Items and Considerations

In some instances, these miners drill and blast the coal after it is cut with the machine. At other times, the machinemen are provided with a rotary drill operated either by compressed air or electricity. In that case, it takes but a short time for the machine runner to set up the drill and put in three holes, one in the center and one on each side of the cut. This procedure, however, is at the option of the mine manager (foreman).

Any kind of labor will answer for the loaders, who will be under the direct charge and care of the timbermen. The success of the operation, the amount of coal recovered in drawing back the pillars, and the amount of timber saved will depend on the quickness with which each lift is cut through. Strong cogs should be built at the mouth of each lift to give better protection while the work is being performed. The front and bottom of the cog is set on a little mound of dirt to facilitate the withdrawal of the timbers forming the cog.

It is important to withdraw all timbers and other supports as the work proceeds, particularly where the coal is overlaid with a strong sandstone roof that is difficult to break. When timbers are left in the gob, the weight will be thrown forward on the pillars, which will induce a creep or squeeze, and it is necessary to guard against this contingency.

If desired, the above procedure can be varied by the practical miners doing their own loading and timbering, besides drilling and blasting the coal and mining out, with picks, the thin rib of coal left behind the machine. This will result, in most cases, in a considerable reduction in the current tonnage rates.

Wherever conditions are favorable to the use of machines, they should be employed as a means of increasing the production and lowering the cost. The system that I have described can be carried on in any number of districts desired, at the same time. However, the safer way would be to start with one district and learn what is necessary to effect any desired improvement in the method. This will, also, overcome the natural prejudice of the average miner, by beginning in a small way. The miner is generally inclined to oppose new methods; but most miners now prefer loading after a machine, to the old system of pick mining.

Matthew Stafford.
Chase P. O., Vancouver Island, B. C.

Safety in Shotfiring

Letter No. 1—Only recently, my thoughts have been recalled to an inquiry of a correspondent in Colorado, published a year or more ago. [*Coal Age*, Vol. 12, p. 647]. The inquirer desired to know to what extent the work of shotfiring was safeguarded in mines generating gas, and to what extent the mining laws of different coal-producing states discriminated between the firing of shots in gaseous and nongaseous mines.

As I say, my thoughts have been recalled to this inquiry by an accident that occurred a short time ago to a shotfirer, who was severely burned by igniting a quantity of gas with his carbide light. In this instance, the mine was classified as a "gaseous mine" and the law required the use of electric lamps, besides imposing other restrictions in regard to the powder used in blasting, copper-tipped tamping bars, etc.

The shotfirer, in this case, had 90 shots to fire and was accustomed to do his work in 4 hours. In his haste to finish, he neglected to make the required examination for gas before preparing the shots and further violated the law by using an open light. No objection had been made to this rapid work. As usual, we go on believing that everything is all right and ignore the fact that the law is being violated, until someone is hurt or killed, and then an effort is made to fix the blame.

Improved Methods Needed in Shotfiring

We have done well in saving thousands of lives by adopting improved shotfiring systems and making this a requirement of the law. Now, let us get busy and try to save the shotfirer from his own heedless neglect of these requirements. We may find that the coal-mining laws of Colorado will have to be altered so as to place more responsibility, for the proper performance of this work, on mine officials, who should know that the shotfirers whom they employ are fulfilling all the requirements of the law.

When a shotfirer is employed, he should be given to understand that 8 hours constitutes a working shift. His time should be divided so that 2 hours should be employed in making the examination of the working places, in his section of the mine. Then, 3 hours should be required to prepare, tamp and fire the shots, followed by an hour's rest and then 2 hours for making an examination of all places in that section, for fire and other dangers.

While the coal-mining laws of Colorado are good laws and insure ample safety when they are not violated,

trouble frequently grows out of the classification of mines by the state inspector, as required by law, designating certain mines as "gaseous" and others "nongaseous." It is my belief that every mine in Colorado should be classed as a gaseous mine and only electric lamps be permitted to be used except in testing for gas when it is necessary to employ an approved type of safety lamp, in the hands of a competent fireboss.

But, aside from the trouble growing out of difference in classification, there are many violations of the law, such as the use of open-flame lamps and matches by firebosses; the use of fuse, which is too often ignited by a match, a lamp flame, cotton cord or punk.

Igniting the Fuse in Presence of Gas

In many instances, firebosses have been instructed to use cotton cord or punk. One instance is recorded where a shotfirer had his eyebrows, nose and the back of his neck burned with gas that was inflamed when he used cotton cord to ignite the fuse, in firing a shot. He had been told that cotton cord and the spit from a fuse would not ignite gas; but, at the same time, he no doubt knew that he was violating Sec. 154 of the mining law.

In many instances, shotfirers are not intelligently informed in regard to what methods must be employed in the performance of their work, in the presence of gas. The object and aim of mining laws and the desire of the people is to secure safety in mines. It is my belief that the conditions that relate to safety, particularly in regard to the use of black powder, methods of firing and the time that should be employed in performing this work, as well as the ascertaining of the competency of firebosses who are employed, are not sufficiently outlined in the state mining laws.

The lesson is brought home to us, from time to time, that either the shotfirer's duties must be performed in the strictest compliance with the laws as they stand, or new laws must be made to safeguard the work of shotfiring in our mines. ROBERT A. MARSHALL.

Farr, Colo.

Efficiency in Firebossing

Letter No. 5—Having given much time and study to efficiency, in the work of firebossing in which I have been engaged during the past few years, I was greatly interested in the letter signed F. G. J., *Coal Age*, Dec. 19, p. 1133. I fully agree with the writer of that letter in his statement that "firebossing, in many coal-mining states, offers little inducement to the best-trained men." There is little incentive for men to study and prepare for this position, as it is at present regarded in many mining districts.

When a position begins to lose its importance and value, in the minds of the higher officials of an industry, it is bound to be classed or regarded by highly trained men as a position not worth having. In one instance that came under my observation recently, I noticed that it was a difficult matter to keep firebosses on the job. Inquiry as to the cause developed the fact that, after the morning examination of the mine, the firebosses employed there were compelled to go to work as ordinary daymen. However, the plan did not work well and the foreman, who thought that he could run the whole mine himself after 7 o'clock, openly admitted, a few weeks later, that "the man who does not consider the duties of his firebosses as important if not greater than his own is not working for efficiency in general."

A foreman who is wise enough to give credit to a good fireboss is unwittingly encouraging him to work in his own (the foreman's) interest, as well as that of the company and himself. A good fireboss means more to a mine foreman than anything else. At times, a danger arises in all mines that requires the best judgment and experience of a competent fireboss, to insure safety. A foreman may then rest contented while his fireboss directs the work. At the same time the foreman is free to attend to other matters that may need his personal oversight. Contrast this condition with a foreman who cannot trust his firebosses or who has failed to gain their confidence. Necessarily, such an one must give his attention to the matters that should be in charge of a man trained for that particular work.

Responsibility and Authority of the Fireboss

My opinion is that a competent fireboss should be counted the most important official on the daily force of a mine. He is responsible for the safety of both the men and the mine, and on his actions largely depends the production of coal in that mine. When a fireboss is underestimated by the other mine officials, the men are prone to disregard his orders, knowing that he is not backed by the foreman; whereas, an order of the fireboss should be *the last word* in respect to the safety of a mine, if accidents are to be avoided and the mine made healthy and safe for work.

A competent fireboss is as important to a mine foreman as the superintendent is to the company, because he spends all of his time in the mine and knows well the condition of every place in his district. He is always able to give any needed information that the foreman may ask.

In case of disaster or danger from fire, explosion, or squeeze in the mine, a competent fireboss has generally prearranged plans of what is necessary to be done for the safety of the men and gaining control of the situation. In his efforts to forestall any danger that may arise in the mine, the fireboss should never be discouraged by the other mine officials, which he is when his work, in that direction, is discounted by them as not of immediate importance.

Observing Firebosses Assist Their Foremen

The advantage that a foreman takes of the knowledge to be gained through his firebosses, is plainly evident by the inquiries he makes, each morning, in regard to how much coal is standing in certain parts of the mine ready to be hauled to the bottom, and what coal is loaded at the working face, besides asking for other information regarding trackwork and timbering that will assist the foreman in starting the men on the most important work to be done that day.

It goes without saying that the first consideration of a fireboss is the safety of the men in his charge, and when he is burdened with looking after matters pertaining to the movement of coal and the work to be performed by daymen at the start of the day's run, his own duties will naturally suffer. In his hurry,

many small matters that menace the safety of the mine will often escape his notice or be set aside for attention later. There is no question but that the efficiency of a fireboss is greatly lessened when he is compelled to attend to matters that should be looked after by others.

At the mine where I am at present employed, I am proud to say that the firebosses are given ample time to do their work properly. There is a good system in use regarding the movement of the coal. When the fireboss checks the men in the morning he marks on a blank, furnished for that purpose, what coal each man thinks he can load that day.

The runner in each lift gets this blank, which he returns to the foreman at the end of the shift, and reports how many cars each man has loaded and whether or not a loaded or empty car is standing in each place, besides the number of loads and empties on the main branch of each lift. This arrangement relieves the fireboss of all matters, except those pertaining to the safety of the mine, and has resulted in a remarkably low accident list, which is entirely due to the efficiency of the work of firebossing in this mine.

Low Standard of Efficiency in Firebossing

Were it not for the discouragement of the situation, it would be amusing to enter a fireboss station, in the morning, and watch him give his orders to the daymen and then proceed to daywork himself. Where a foreman has occasion to censure a man for not doing a fair day's work, the man comes back with the excuse that he has done as much as the fireboss, who gets more pay for the same work. The man apparently forgets that the fireboss has already done half a day's work, in making his morning examination of the mine.

Such a system presents a low standard of efficiency and sows the seeds of discontent among the men, which causes no end of troubles to the foreman. Where competent firebosses are subject to such treatment, it will be difficult to hold them in that position. The really competent fireboss will seek work elsewhere, before he will tolerate a low estimate of his ability and the importance of the work he performs.

Then, in closing, let me say that the only way to secure true efficiency in firebossing is for the higher officials of the mine to recognize the importance of that position and permit firebosses to give their whole time and attention to matters pertaining to safety.

Plymouth, Penn. Joseph R. Thomas.

Letter No. 6—I read with much interest the excellent letter of F. G. J. on this subject, *Coal Age*, Dec, 19, p. 1133. That writer emphasizes the point that "the fireboss should be, and is, in many mines and in many respects, as important as the foreman." There is little doubt but that being so considered will establish confidence in the fireboss, stimulate his ambition and increase the efficiency of his work.

The same writer, in closing his letter, urges that the fireboss "be regarded as a mine official, put on the salary list and treated by the mine foreman as his assistant." I wonder how many of the firebosses, in Colorado, desire to be put on the salary list, as formerly, when they were paid $110 a month for their services. The present wage scale of the fireboss, here, is $5.95 per day, which enables him to make from $178 to $184 a month. The salary of the mine foreman was formerly $130 per month and, by the present wage scale, that official draws $185 per month.

The fireboss in Colorado is a mine official in the meaning of the mine law, which provides for his examination and certification in common with other mine officials and, in my opinion, the fireboss is such an official. For the sake of argument, allow me to disagree with the suggestion made in the letter to which I have just referred that the fireboss should be "treated by the mine foreman as his assistant."

The Colorado coal-mining law provides for the employment of assistant mine foremen, whose duties are to carry out the instructions of the foreman and take his place in his absence; but the duties of the fireboss are of a different nature. That official goes home at 11 a.m., not to return to the mine until about 4 p.m. It is easy to see that he occupies a distinct position in the mine, and his efficiency depends only on the manner in which he performs his duties.

If the fireboss was an assistant to the mine foreman, he would have to obey his instructions. Right here is where trouble would begin. Suppose, for instance, that a fireboss is busy putting up a brattice to remove the bad air from a working place and the foreman orders him to make the second examination of the mine. The fireboss drops his work on the brattice to obey the instructions of the foreman, with the result that the miners who are thus left working in bad air get sick and go home.

However, the fireboss would seldom complain when thus called away, because he is given an opportunity of visiting the working places and marking the date on the face of the coal in any place where, in his hurry in the morning, he has failed to do that which the law requires. The foreman sees the date on the face, later, and believes the fireboss is efficient.

Need of Revising Mining Laws

It is a pleasure to know that the columns of *Coal Age* are open to any suggestions that are intended to make the mine more safe; and I want to say that it is my belief that the Colorado law could be revised to advantage, in one or two instances. In my estimation, the law should provide that the fireboss should enter the mine at 1 a.m., having with him a bratticeman and timberman. With their assistance, it would be possible to erect the necessary brattices for the removal of gas; or set such timbers as may be required to support bad roof; or take down a loose piece of top that is about ready to fall. By removing these dangers promptly when found, the efficiency of firebossing would be greatly improved.

Again, greater safety would be insured if the law provided for the appointment of a safety inspector instead of the present assistant foreman. A first-class, certified, mine-safety inspector or examiner would find ample opportunity for his services, in every gaseous mine and wherever dangerous roof conditions exist. Copies of his report made at the close of each shift and stating what dangers were found should go to the manager of the mine and the state mine inspector, which would inform them of the general safety of the mine.

Farr, Colo. Robert A. Marshall.

INQUIRIES OF GENERAL INTEREST

Belting Used in Anthracite Breakers

Can *Coal Age* or any of its readers inform me in regard to the amount of leather and rubber belting used in the operation of a modern anthracite breaker? I am desirous of securing figures that will show, approximately, the amount of belting required to operate an uptodate anthracite breaker, capable of handling a given tonnage per day.

In other words, I want, if possible, to compile an estimate showing the amount of belting required, either leather or rubber or both, per ton of coal handled. I do not refer to the amount of belting consumed in a year or other period of time; but, simply, what amount of belting is required to equip a modern breaker.

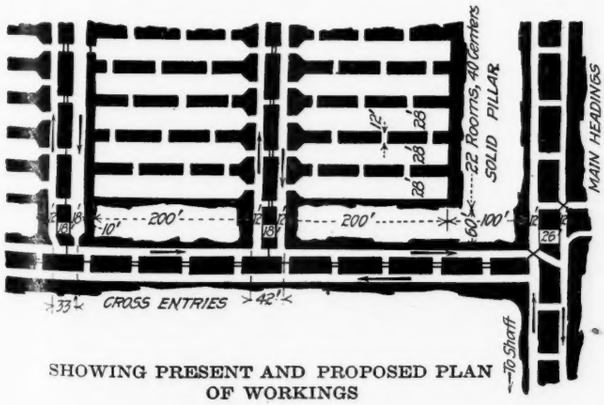
Scranton, Penn. MECHANICAL ENGINEER.

This question should not be difficult to answer, where one has access to the working plans or drawings of a modern breaker, such as is in use today throughout the anthracite region. We hope that some of our readers who are able to give this information will reply to this inquiry, as the information thus offered would be a valuable contribution to technical mining literature.

Panel System of Mining

The mine of which I have charge is a machine mine, all the coal being undercut with a 6-ft., Sullivan, short-wall machine. As indicated in the accompanying figure, the mine is worked on the panel system.

Cross-entries or panel-entries are driven off the main headings, about 1000 ft. center to center. Room or butt



SHOWING PRESENT AND PROPOSED PLAN OF WORKINGS

headings are then turned on one side only of each pair of panel headings. The room headings are driven on 442-ft. centers, which allows for rooms 200 ft. deep, turned to the right and left of these headings.

The width of all entries is 12 ft. and the entry pillars are 18 ft. wide. A solid pillar of coal 100 ft. wide separates the main headings from the faces of the rooms. The rooms turned to the right and left of the butt headings are driven on 40-ft. centers and widened to 25 or 30 ft., which makes the room pillars vary from 10 to 15 ft. in width.

There are several disadvantages in the employment of this system. In the first place, there is always a back haul for all coal mined in the rooms driven toward the main heading. This back haul amounts to about 200 ft. when these rooms are about finished.

Again, it frequently happens that much coal is lost, owing to bad roof conditions, poor ventilation, and the difficulty of maintaining good roads in the rooms where the drainage is often poor. Owing to these causes, the cost of getting out the last of the coal, between two pairs of butt headings, is more than the coal is worth and necessitates its being abandoned and lost beyond recovery.

Another bad feature is that the panel entries, in this system, must be driven forward a distance of 442 ft., before another pair of butt headings can be turned, which is a long way to go for a single car of coal. But, more important still, is the slow development of the mine necessitated by this plan. Because of these hindrances, we have been seriously considering changes that will overcome the most or all of the objections mentioned. The proposed changes are as follows:

As shown on the left of the figure, when the panel headings have advanced a sufficient distance, an 18-ft. air-course and a 12-ft. roadway, separated by an 18-ft. pillar, will be turned at such a distance as to leave a 10-ft. solid pillar between the air-course and the faces of the 200-ft. rooms driven from the last pair of butts. In this plan, there will be no back haul; and it will be possible, by holing through from the air-course, to reach and recover any coal that may have been left in the faces of the old rooms.

This proposed system can be continued indefinitely by driving a similar 18-ft. air-course and 12-ft. roadway across the faces of the 200-ft. rooms, as before, and leaving a 10-ft. solid pillar to protect the air-course. The panel entries will then require to advance only 258 ft., before turning a new pair of butts. Kindly say if, in the opinion of *Coal Age*, this proposed plan will improve the present system. R. J. PICKETT.

Shelburn, Ind.

There is no question but that the proposed change will prove a great advantage over the system formerly employed. We shall be glad, however, to hear the opinions of *Coal Age* readers on this proposition.

It is possible for practical miners to offer many good suggestions and criticisms on the proposition presented in this inquiry and, by so doing, give this correspondent the benefit of their experience. Many letters, received from time to time, bear testimony to the helpfulness of this department of *Coal Age*, when their inquiries have been taken up and discussed by readers.

EXAMINATION QUESTIONS

Mine Managers' Examination, Springfield, Ill., Dec. 17, 1918

(Selected Questions)

Ques.—To increase the velocity from 5 ft. per sec. to 10 ft. per sec., how much will it be necessary to increase the ventilating power and what will be the increase in the consumption of coal to accomplish this purpose?

Ans.—Other conditions remaining unchanged, the power producing circulation in an airway varies with the cube of the velocity of the current. In this case, the velocity being doubled, the power must be increased eight times.

For the same quality of coal and efficiency of the plant, the coal consumption is proportional to the power generated. To double the velocity, then, will require eight times the weight of coal consumed.

Ques.—What power will be required to give a current of 60,000 cu.ft. of air per min., in a mine having four equal splits, the airway in each split being 6 x 8 ft. and 5000 ft. long?

Ans.—In this case, the total sectional area of the four splits is $4(6 \times 8) = 192$ sq.ft. and the total rubbing surface $4 \times 5000 \times 2(6 + 8) = 560{,}000$ sq.ft. The velocity of the air in each split is $60{,}000 \div 192 = 312.5$ ft. per min. The power on the air, in this case, is therefore,

$$H = \frac{ksv^3}{33{,}000} = \frac{0.00000002 \times 560{,}000 \times 312.5^3}{33{,}000} = 10.35\ hp.$$

Ques.—If a collar or crossbeam, 10 in. in diameter and 6 ft. between notches, bears a certain load, what should be the diameter of a collar 12 ft. between notches, to bear the same load?

Ans.—As the question reads, it refers to the total load borne by the collar, in each case. Then, assuming an equal load is uniformly distributed over the length of each collar, the diameter of the collar will vary as the cube root of its length. In other words, in that case, the diameter ratio is equal to the cube root of the length ratio. Calling the required diameter of the 12-ft. collar x, we have,

$$\frac{x}{10} = \sqrt[3]{\frac{12}{6}} = \sqrt[3]{2} = 1.26$$

$$x = 10 \times 1.26 = 12.6 \text{ in.}$$

It is evident, however, that this does not represent the condition of a load on a collar, in mining practice where a 12-ft. collar, being twice as long, must carry twice the load of a 6-ft. collar. Hence, in mining practice, it is the unit load, or load per foot of length of collar, that is the same in each case, and the diameter of the collar then varies as the cube root of the square of its length;

or,
$$\frac{x}{10} = \sqrt[3]{\left(\frac{12}{6}\right)^2} = \sqrt[3]{2^2} = \sqrt[3]{4} = 1.587$$

$$x = 10 \times 1.587 = 15\tfrac{7}{8}, \text{ say } 16 \text{ in.}$$

Hence, a 12-ft. collar, capable of withstanding the same roof pressure as a 6-ft. collar 10 in. in diameter, must have a diameter of practically 16 inches.

Ques.—An entry is parallel to a landline and 150 ft. from it. If the rooms turned off the entry run at an angle of 45 deg. with the entry, what distance can they be driven, allowing a barrier of ten feet to comply with the mining law?

Ans.—Since the sine of 45 deg. is 0.707, the length of the room measured on the straight rib, from the entry to the boundary line, is $150 \div 0.707 = 212.1$ ft. The same result is found, in this case, by extracting the square root of twice the square of the distance between the entry and the landline; thus,

$$\sqrt{2 \times 150^2} = \sqrt{45{,}000} = 212.1 \text{ ft.}$$

Ques.—With three horsepower, we are producing 20,000 cu.ft. of air per minute; how many horsepower will be required to produce 40,000 cu.ft. of air per minute, in the same airway?

Ans.—For the same conditions in the airway, the power producing an air current varies directly as the cube of the quantity of air in circulation; or, in other words, the power ratio is equal to the cube of the quantity ratio. Then, calling the required power, in this case, x, we have

$$\frac{x}{3} = \left(\frac{40{,}000}{20{,}000}\right)^3 = 2^3 = 8; \quad \text{and } x = 3 \times 8 = 24 \text{ hp.}$$

Ques.—(a) Does a high water gage always indicate a large quantity of air passing? (b) What does a low water gage with a large quantity of air passing indicate?

Ans.—(a) No. A high water gage may be caused by an undue length of airway; a restricted sectional area of the airway; or an obstruction in the air-course, all of which will increase the resistance of the mine and decrease the quantity of air in circulation, for the same power applied.

(b) The circulation of a large quantity of air under a low water gage indicates an ample sectional area of the air-courses, and shows that they are free from obstructions that would hinder the flow of air through them. In a large mine, the conditions mentioned indicate that the air current is divided into two or more splits, which reduces the velocity of the air and the mine resistance.

Ques.—What are the breaking strain and safe working load for a good steel rope $1\frac{1}{8}$ in. in diameter?

Ans.—For a 6-strand, 19-wire, crucible cast-steel, hoisting rope $1\frac{1}{8}$ in. in diameter, the breaking strain is $S = 39\ (1\frac{1}{8})^2 = 49.36$, say 50 tons. Using a factor of safety of 5, the safe working load on this rope is 10 tons.

For a 6-strand, 7-wire, crucible cast-steel, haulage rope, $1\frac{1}{8}$ in. in diameter. the breaking strain is $S = 37\ (1\frac{1}{8})^2 = 46.83$ tons; and, using the same coefficient of safety, the safe working load of this rope is $46.83 \div 5 = 9.36$ tons.

FOREIGN MARKETS AND EXPORT NEWS

Coal Imports of Greece

Greece in normal times imports more than 500,000 tons of coal annually. This amount consists usually of 10 per cent. Welsh coal (best Cardiff); 25 per cent. second quality Welsh (Newport), containing 20 to 30 per cent. of small coal used for factories and steamers; 10 per cent. of second quality used only for obtaining gas; 35 per cent. bunkering coal (Durham, Yorkshire and Northumberland); 10 per cent. patent briquets; and 10 per cent. German coal. As will be seen from this, England has had practically the monopoly of coal in the past. After the outbreak of the war America shipped a certain quantity of coal to Greece. American coal that sold best was the Pocahontas grade.

The question whether America can compete with England depends in great measure on return cargoes. In the past English vessels usually unloaded coal at Piraeus on their way to a port in the Black Sea to load grain. They thus brought coal to Greece at a nominal freight, preferring to do this than go out in ballast. Therefore, if the United States is to compete with England in this commerce, it will have to be assured that ships exporting coal to Greece will come back laden. It is thought that this might be done through arranging cargoes of tobacco, skins, emery, magnesite and marbles from Greece, with licorice root, carpets, dried fruits, emery and tobacco from Turkey.

In normal times ships discharged in the port of Piraeus at the rate of 400 tons per day, except when a strong southeast wind was blowing, which made unloading difficult. After the outbreak of the European war, when even a few days' delay meant a great loss to a steamer, owing to the increase of freights, steamers of four or five thousand tons succeeded in unloading 500 tons a day on an average. It has been stated, however, that larger ships with four holds and separate winches for each hold could discharge easily 700 tons per day.

Formerly the coal merchants at Piraeus held a stock of about 60,000 tons of coal available for purchase at $5 to $9 per ton. After the war broke out and up to the time of the blockade of December, 1916, to June, 1917, fair amounts of Welsh steam coal and American Pocahontas could be obtained at Piraeus at $55 or $60 per ton.

Ships coming in during that period and desiring coal, on giving notice the evening before, could begin coaling the next morning at the rate of 300 tons per day; in those days coal was always kept on lighters. A fleet desiring to coal could, on four or five days' notice, obtain 1000 tons daily.

A list of the principal coal merchants of Piraeus may be obtained from the Bureau of Foreign and Domestic Commerce or its district and coöperative offices upon referring to file No. 104,449.

Shanghai Coal Market

Under date of Jan. 16, Wheelock & Co., of Shanghai, report that the annual contracts for Japanese coal for 1919 have been concluded, and that buyers can consider themselves fortunate to have closed their contracts when they did, as prices have risen still higher in Japan owing to large orders for the Government railways and increased industrial and shipping requirements. It is hoped that during the year the output of the Japanese mines may be somewhat improved, but there seems to be no doubt that the demand for coal will far exceed any possible increase in output that may be attained; so that there is little prospect, judging from present indications, of any easing up in prices.

Owing to various difficulties caused by insufficient labor and transport facilities the Fushun coal mines have found it quite impossible to cope with the demand and they have been forced to ask for some delay in deliveries. These mines will not be able to entertain any new business for some time to come.

A large demand continues for the better grades of Kaiping coal, and although the freight market is slightly easier than it has been, it is not expected that there will be any large slump in local freights, as the building of small vessels has been neglected for the past two years. Some idea of the extension of the Kaiping coal market can be gathered from the fact that during the last few months over 40 steamers per month have left Chinwangtao for Dalny, Korea and Japan—a business that did not exist a few years ago.

Increase in Coal Exports

Some indication of the growth of coal exports from Norfolk, Va., within the past twenty-five years is shown by a comparison between the figures for January, 1894, and January, 1919. During January, 1894, William Lamb & Co., agents, exported 120,051 tons of coal from the port of Norfolk. This, export authorities say, represented practically the entire shipment of coal from the port during that month.

The records for January, 1919, show that during that month the coal shipments from Norfolk aggregated 796,139 tons. This includes the dumpings of both the Norfolk & Western piers at Lambert's Point and the Virginian piers at Sewall's Point. The total coal exports for all of Hampton Roads, which includes, besides the Norfolk & Western and the Virginian, the Chesapeake & Ohio piers at Newport News, were 1,068,262 tons.

Hampton Roads exports, as divided between the three big coaling terminals, for the month is as follows: Norfolk & Western, 490,336; Virginian, 305,803; Chesapeake & Ohio, 272,123.

The records show an increase of 209,894 tons for January, 1919, over the same month of last year, the exports for January, 1918, being 858,368 tons. Exporters say that this is due in a measure to the railroad tieups during the unusually severe weather of last January.

No Ships for Coal Exports

Tonnage that will permit of any extensive forwardings by the Coal Export Association, probably will not be available during the next ninety days. The charter for the association has been applied for and it will be possible to begin shipments at an early date if the tonnage could be secured. Food is being exported at the rate of 1,000,000 tons a month, which, with the turning back of the Dutch vessels, gives little promise for the allotment of ships for coal exports. The operations of the new association will be begun at Hampton Roads.

There arrived at Rio de Janeiro, Brazil, during October, 1918, reports Vice-Consul R. P. Momsen, 16,033 metric tons of foreign coal (all American fuel), as compared with 25,396 tons (19,365 tons American, 6031 tons British) in the corresponding month of 1917 and 51,814 tons (all American) in October, 1916. For November the imports amounted to 18,282 tons (12,842 tons American, 5440 British), contrasted with 27,488 tons (22,697 tons American, 4791 British) in November, 1917, and 77,121 tons (American 65,341 tons, British 11,780) in November, 1916.

Anthracite for Scotland

In a recent communication Consul H. D. Van Sant, Dunfermline, stated that the question as to whether anthracite is suitable for the open grate fire—almost in universal use in Scotland—is now being seriously considered, owing to the soft-coal scarcity, though there is still considerable doubt expressed as to its practical utility in relieving the coal shortage situation. Its advocates claim that this coal can be used with good results in an ordinary open grate, and that those who can purchase anthracite or who may have it in stock are in a position to secure an ample supply of heat during the winter by adding a small portion of the rationed supply of coft coal. The fires must always be started with ordinary soft coal, then the anthracite coal added when the soft coal is well alight.

Scottish anthracite is claimed to be more bituminous than Welsh coal and not so plentiful, being found in such thin seams that, owing to the present lack of miners, it would not be profitable nor possible to mine it to any great extent. American anthracite is said to be a much better quality than the Scottish, but the price is practically prohibitive.

In case the effort to introduce anthracite throughout Scotland is successful, and the future price of American anthracite is sufficiently low to meet competition, the question of the introduction of American hard coal in this soft-coal-producing district is an interesting one and worthy of consideration by American coal exporters.

New Brunswick Coal Imports

The report of the Fuel Administrator of New Brunswick, Canada, shows that of the total allotment of 77,140 tons of anthracite made to the Province by the United States Fuel Administration for the fiscal year ending Apr. 1, 1919, a total of 46,334 tons was used during the eight months ending Nov. 30, 1918. In addition to this it is estimated that 700 tons have been imported into the Province which have been obtained through jobbers, not operators.

There is no change reported in the South American port strike situation. Latest advices state that more than 180 vessels are being held in the harbors of Buenos Aires, Montevideo, Bahia Blanca and other ports on account of the strike. The vessels have a tonnage of 550,000.

One of the principal imports at the port of Santander, Spain, in normal times is coal, which is needed in the province for the railways, gas companies, electric-light plants, metallurgical works, domestic use, etc. In 1914 the demand for local use was about 150,000 tons, and came from England. Since the war started but a very small proportion of this quantity has been received. Efforts are being made to increase the production of domestic coal, although up to the present time supplies are limited and not satisfactory, and many industrial works were obliged to curtail or close up completely on account of scarcity.

Hampton Roads Coal Exports

NORFOLK

			Cargo	Bunkers
Lamberts Point				
Feb. 10	Amer. S.S. Point Adams	Pearl Harbor, Hawaii	2,973	....
Feb. 11	Nor. Bk. Steinsund	Rio de Janeiro, Brazil	4,422	....
Feb. 12	Br. S.S. Siamese Prince	Buenos Aires, A. R.	6,064	1,379
Feb. 12	Amer. S.S. Kiowa	Bridgetown, Barbados	2,196	361
Feb. 15	Ital. Bk. Santa Caterina	Piombino, Italy	2,107	....
Sewalls Point				
Feb. 12	Amer. S.S. Point Arena	Pearl Harbor, Hawaii	2,137	470
Feb. 13	Amer. S.S. Lakeland	Cristobal, C. Z.	3,341	532
Newport News				
Feb. 11	Amer. Sc. Daisy Farlin	Sagua la Grande, Cuba	596	....
Feb. 13	Nor. Bk. Alcyon	Rio de Janeiro, Brazil	2,807	....
Feb. 13	Amer. Sc. Sara E. Turner	Point a Pitre, Guadalupe	741	....

COAL AND COKE NEWS

Harrisburg, Penn.

Representative McIntyre has introduced in the House a bill providing that every corporation doing business in Pennsylvania shall deposit with the Bureau of Statistics in the Department of Labor and Industry a sworn list, giving the following information: Its capitalization, bonded indebtedness, physical value of each corporate holding, gross income, gross expenditures for the fiscal year preceding the making of the list, and how the expenditures were proportioned between labor, capital taxes, improvements and repairs; and further, provides for the regular filing of a list giving the names and addresses of all stockholders and shares of stock held by each.

Representative Glass, of Philadelphia, has introduced a bill in the House which provides that the Governor be authorized to appoint a commission to make an inventory of the food and fuel products of the state. This bill covers both anthracite and bituminous coal. The bill of 1915 provided only for a commission to investigate anthracite coal, but the present bill is much wider in scope. The proposed commission will be authorized to investigate the question of the reduction in the cost of fuel and empowers the commission to provide for the proper and equitable distribution of food and fuel, and to fix a maximum price therefor; also to confiscate any food or fuel products in the possession of individuals or corporations refusing to sell at prices fixed by the commission.

The Governor is authorized to appoint a commission of nine citizens of the Commonwealth. Two of the commissioners shall be members of the present House of Representatives and two shall be members of the present Senate. The sum of $25,000 is asked for the use of the commission for the purpose of carrying out the provisions of the proposed act.

Representative Goehring has introduced in the House an amendment to the act of June 2, 1915, which established an elective schedule of compensation and procedure for the determination and compensation under the Workmen's Compensation law. The amendment calls for "Serious and permanent disfigurement of the head, face or hands, 50 per cent. of the wages during 215 weeks."

Uniontown, Penn.

Interest in the Connellsville coal and coke trade just now is centered upon contracts made for the first half of the present year upon the basis of the Government price of $6 per ton, coke, at ovens. That phase has been before the trade since Feb. 1, when Government prices were removed, and it is now believed that agreements have been reached upon all contracts that will be revised.

Revision of contracts calling for the Government price have ranged down as far as $5, with some at $5.50, but the largest independent coke operators have yet in force the original $6 contracts and there seems little likelihood of any more revisions as regards prices although quantity of delivery has been sharply reduced. In one instance of a revised contract upon a basis of $5, the furnace operator agreed to submit cost sheets to the coke operator at time of settlement. If at that time he could show that it was unprofitable for him to operate his furnace with coke at more than $5, the coke operator agreed to sell him coke at that figure. On the other hand, if a profit was shown by the cost sheets the price of coke was to be advanced accordingly.

There is a unanimity of opinion that the stabilization of the region upon a fixed basis during the present period of uncertainty was reached this week. The region is now operating at a 50 per cent. basis with a four- and five-day run the general rule. Operators in many instances have organized their plants for a five-day run by placing ovens on the inactive list and operating the others continuously. There has as yet been no employment problem in the Connellsville region, all workmen being given restricted employment.

Charleston, W. Va.

The output of coal in the Kanawha region during the week ending Feb. 15 was smaller than for the previous week. Innumerable mines throughout the district are shut down. As the month grows older there appears to be no improvement whatsoever, more and more mines having been shut. Kanawha producers are not so optimistic as they were a few weeks ago.

New River mines continue to be affected insofar as their regular, continued operation is concerned by tidewater congestion, and while a limited tonnage is moving to western markets, it has not been sufficient to make up for the loss of eastbound coastwise tonnage. The effect of such conditions during the week ending Feb. 15 was of course to hold down production to an appreciable extent. The claim is made that New England needs coal but is waiting to place orders in the hope of securing better prices. Some of the largest producers in the New River field have simply discontinued operations. Consequently, not only are a large number of mines shut down, but there is much idleness and the Bolshevik spirit is more or less rampant.

Production in the Guyan or Logan mining district dropped to 96,363 tons for the week ending Feb. 15, only a little more than one-fourth of the full-time capacity of the whole district. The district has been hard hit by present market conditions.

During the first half of February the mines of the Pocahontas district felt the effects of a waning market severely. Up until Feb. 1 production held up remarkably well, but it has now dropped to 279,151 tons, a decrease of over 100,000 tons, the last report showing an output of 385,000 tons. Such a slump, of course, was caused by a restricted market. Production would have been even less had it not been for the fact that it was possible to utilize part of the coal produced in the manufacture of coke, the coke production having been doubled from 46,000 tons to 82,379 tons.

Still further increases in the number of idle mines on the Monongah division of the Baltimore & Ohio and, in fact, throughout the twelve or thirteen coal-producing counties in northern West Virginia, were observed during the week ending Feb. 15. At that time on the one division the number of idle mines totaled 181. As there are 215 mines on that division, only 35 mines were operating. The same was true throughout the whole northern region. Production was virtually at a standstill and even where mines had not shut down coal was accumulating in cars unconsigned and therefore subject to demurrage, which has been mounting very rapidly throughout the northern section.

New York, N. Y.

To have a full and free discussion regarding the situation in which anthracite industry finds itself there was a gathering of operators and distributors in the Whitehall Building last Friday afternoon (Feb. 21), but at its conclusion it was stated that no definite plan had been outlined. Every person present agreed that the coal market at present is in a bad condition; and that owing to the warm weather, the supply is greater than the demand.

It was also stated that there was no effort being made to change prices from what they now are, and that it was generally agreed that the industry must be put back on a normal basis. In the meantime, it was stated, every individual concerned will try to work out his own salvation.

At the mining session of the annual meeting of the American Institute of Mining Engineers held here last week, S. D. Warriner, president of the Lehigh Coal and Navigation Co., in discussing mining conditions said that more than 60 per cent. of the coal now being sent to market is sold at a loss. Along these lines Mr. Warriner stated that with the reëstablishment of commercial conditions the prices arbitrarily fixed disappear, the result being financial operating loss to more than 60 per cent. of the industry.

The consumer, Mr. Warriner said, would not be especially interested in this phase of the situation were it not that with the indefinite closing down of high-cost operations, which is now taking place, the capacity of the anthracite mines is below the average annual production needed. This will inevitably tend to create a shortage unless coal can be stored by the companies for future use. Storage, however, is only economically practicable when there is stability of market conditions, otherwise the expense and risk make it prohibitive. For this reason the trade policy of the industry has been so far as possible under existing laws, to promote stable conditions by the summer discount in price, thus encouraging the consumer to store a portion of his winter supply, the operator storing the rest. By this method steady operation of the mine was insured and the annual supply required by the market obtained. For a number of years the anthracite industry would otherwise have been unable to supply the market requirements.

Today, continued Mr. Warriner, the anthracite industry is left by the Fuel Administration under the handicap of inadequate prices, a wage structure still under Government control and a tendency toward declining prices in all commodities, with the problem of recreating the stable commercial condition necessary to the prosperity of the industry as well as to the comfort of those who are dependent on anthracite for fuel.

Others who spoke along similar lines were R. V. Norris, who predicted an increase in the price of coal; Edwin Ludlow, vice-president of the Lehigh Coal and Navigation Co., who discussed conditions under which operators worked during the war and who stated that increased wages meant decreased ambition; and J. B. Neale, of Thorne, Neale & Co., who outlined some of the work accomplished by the Fuel Administration.

Victoria, B. C.

C. A. Magrath, Fuel Controller for Canada, has announced that the control of coal prices in British Columbia by the department of which he is the head ceased on Feb. 11 last. The collieries therefore are put back on the old competitive basis.

A. I. Fisher, member of the British Columbia Legislative Assembly for Fernie District, delivered an address in the House recently deploring the waste existent in the Crowsnest Pass coal fields in the manufacture of coke. He declared that it was a pity that the byproducts of the coal continued to be driven off into the air by the use of the obsolete beehive ovens. It was only a matter of chemistry, he declared, and the application of such measures as could be defined by experts which would permit British Columbia to profit by the manufacture of many commodities which, in pre-war days, were held as monopolies by other countries.

A bill has been introduced to the British Columbia Legislature providing for the application of a 44-hour week to all industrial workers of British Columbia. Its sponsor is James Hawthornthwaite, the member for Ladysmith, B. C. There are on the statute books of British Columbia two acts passed in 1918 through the instrumentality of Hon. William Sloan, Minister of Mines. One sets the hours of labor for all employed above ground in connection with coal mines of this Province at eight hours, thus placing this class of employee on the same basis as underground workers, except that the working day of the latter begins the moment they leave the surface. The other gives miners engaged in metalliferous mines, above or below ground, the eight-hour day. Both these enactments are effective on Mar. 31, 1919. If Mr. Hawthornthwaite's measure is indorsed, therefore, it means that in addition to the eight-hour day the miners of British Columbia will have a half holiday on Saturday.

PENNSYLVANIA

Anthracite

Beaver Brook—C. M. Dodson and Co. are preparing to take out the coal from their latest stripping proposition, a Wharton vein working, on the southern boundary of their property. They have recently completed a machine shop, replacing one damaged by a mine cave.

Jeanesville—Mine workers' officials are trying to arrange with the Lehigh Valley Coal Co. officials to give the suspended miners at the Jeanesville and Yorktown collieries their share of employment so that they will not be discriminated against. While the operations have been indefinitely shut down, the miners are urging that the company rescind its order to the extent of permitting work for three days a week.

Hazleton—Declaring that the steady pull at the mines during the past three years was extraordinary, managers of the big coal companies in the Lehigh field said that the present slackness in the trade would give them a long-sought opportunity for making necessary repairs. It was not thought possible that the big plants could be kept going much longer without breakdowns, but not one mine in this section had to close on account of accident.

Port Blanchard—A new washery has been completed by the Pennsylvania Coal Co. at No. 14 colliery and will be in operation some time during the summer. The washery will have a capacity of 500 tons a day and will be operated by steam. The plant was ready for operation Jan. 1, but on account of the mild winter the demand for anthracite decreased to such an extent that it was not deemed advisable to begin preparing coal until later in the year. Men from No. 14 colliery will operate the washery.

Jeddo—The G. B. Markle Co. has cut the price of coal to its wagon trade 75c. per ton in accordance with the passing of the Fuel Administration's price restriction. The company is storing coal in underground chutes and on the surface, and is working a normal schedule. A worker engaged in storing coal was drawn into an underground chute and, after an exciting experience, was rescued unhurt.

Miners employed by J. S. Wentz & Co. and the Upper Lehigh Coal Co. were cutting coal on idle days and making full-time pay. Their action was resented by the transportation employees, and their local unions have ordered all idle-day coal-cutting stopped.

Bituminous

Brownsville—The Rich Hill Coke Co., operating a mine and 150 beehive coke ovens 12 miles east of Uniontown, on the Baltimore & Ohio R.R., has closed down indefinitely on account of lack of business.

Connellsville—The H. C. Frick Coke Co., which for the past few weeks has been operating its plants only four and five days a week, will put half its plants in this region back to six days a week. The other half will be operated five days.

Leisenring—The du Pont Powder Co. is erecting two large storehouses and distributing stations here to relieve the overwork at its Fairchance and Leckrone stores. The new stores are in charge of A. W. Matthews. The explosives will be distributed from this point by motor trucks.

Scottdale—James Wardlaw, of this city, has organized a mining class at the Dearth mines to instruct several mining men in questions and current topics on mining to prepare them for the annual mine foreman's examination, which will be held in April. The mining class meets two days each week.

Tarentum—The West Penn Power Co. is preparing to open a large mine in Allegheny County on the Allegheny River near Tarentum (on the Allegheny Valley division of the Pennsylvania R.R.) to supply coal for the large power plant it is building at Springdale, nearby. It will be a shaft operation in the Freeport coal.

Somerset—On account of the increasing coal traffic in the Somerset District, on the Baltimore & Ohio, the railroad company has moved a large portion of the Meyersdale employees to Somerset and will work these crews from the new division headquarters here. This will move about fifty families to the place from Meyersdale.

Somerset—The Pennsylvania Smithing Coal Co has purchased the Adams mine near here, formerly owned by S. M. Hamilton & Co., of Baltimore. The entire property was purchased a few months ago by Charles F. Roy and others, of Somerset, who made the sale to the Pennsylvania company. The property includes about 1200 acres of coal and all improvements, tipple, houses, etc. It is located on the Somerset & Cambria branch of the Baltimore & Ohio and is opened in a seam of coal that has not been developed at any other point.

Uniontown—Development of the Fuller tract of coal in Perry township to an eventual capacity of 2000 tons daily will be commenced at once by the Jamison Coal and Coke Co., which recently purchased 575 acres at a little more than a million dollars. The company has recently acquired the plant of the No. 3 opening of the Washington Coal and Coke Co. and will use that plant as an outlet for the Fuller field. Another outlet is now situated on the opposite end of the field and a restricted tonnage has been taken out during the past few months. The entire output of the Fuller field will be shipped in raw coal to the Bethlehem Steel Co. for its by-product plants. About 50 men are now employed at the new operation, engaged principally in erecting houses. Ten bungalows are under construction and more will be built when required. R. M. Pollack, formerly with the Washington Coal and Coke Co., is superintendent of the Jamison's new plant.

WEST VIRGINIA

Bower—Since last summer, when announcement of the company's plans were made in "Coal Age," the West Virginia Coal and Coke Co., has had under construction one of the most complete Y. M. C. A. buildings in the coal fields of West Virginia, at this place. The structure is now practically completed. Within its walls every provision has been made for the comfort, convenience and amusement of its employees.

Williamson—As a preliminary step toward engaging in extensive development of the large area of coal land recently purchased from the Kountz Bros. estate of New York, the United States Steel Corporation has a corps of engineers going over the property.

Work has been completed on a new tipple erected by the Standard Thacker Fuel Coal Co. A number of other improvements have also been made by the same company.

A new tipple is being built by Goodloe Brothers on their leased tract of coal at the mouth of Pond Creek near Williamson.

Philippi.—William Taylor George, on behalf of himself and associates, has sold to the Raccoon Coal and Iron Co. the following mines: Randolph Smokeless Coal Co., the Joseph Hart land on Rich Mountain, 2500 acres, $250,000; the T. J. Jones tract of 35 acres at Wilmoth for $50,000; the Maranz Coal Co. at Middle Creek, in Clay County, $60,000, and the Clay County Fuel Co., near Hartland, $65,000, making a total of $425,000. This is one of the biggest deals in this section of West Virginia in a long period.

INDIANA

Terre Haute—The average number of mines idle in Indiana daily is 52. The approximate number of miners who are out of employment is 10,000. In the Terre Haute field there are 42 mines, half of these being idle, throwing 2000 men out of work.

Clinton—Joseph Colan was brought before Justice of the Peace M. L. Casey on a charge of opening a keg of powder with a pick. Colan is a miner employed in the Clinton fields. He pleaded guilty and was fined $1 and costs, amounting to $8.75, which he paid. Colan claimed he did not know he was violating any law.

Petersburg—The Pike County Coal Co., with head offices in Chicago, which recently leased 5000 acres of coal land in western Pike County and eastern Gibson County, has a number of testing rigs at work on its leases and as soon as the tract is thoroughly tested two new coal mines are to be located near Oatsville, nine miles west of this city. The mines will be connected with the Evansville & Indianapolis R.R. by switch from Littles, and will follow the Patoka River to a point near Oatsville and then extend north to where the new mines are to be located. The switch will be built this summer. The Pike County Coal Co. owns the Atlas No. 1 mine in this city, and in March will start the erection of a steel tipple capable of handling 4500 tons per day, which will make it the largest mine south of the Baltimore & Ohio R.R. in Indiana. Just east of Spurgeon, during the past month, 3500 acres of coal land have been leased and bought, and a number of stripping mines are to be operated on this land during the coming year.

ILLINOIS

Pana—Members of the four Pana locals of the United Mine Workers, alleging that the charges made by undertakers for burial of members are extortionate, are taking steps to organize an undertakers' cooperative association, to membership in which all citizens of the township as well as the miners, will be eligible. The miners in their statement assert that they have been unable to reach any agreement with Pana undertakers for burials at reasonable prices.

Pekin—Satisfied to leave whatever grievances they may have for settlement with the proper officers of their organization, all of the 500 mine workers in the employ of the Groveland Mining Co. have returned to their work. Pending the settlement of the controversy, which resulted over the refusal of the men to work under Clait Maupin, top boss at Groveland Mine No. 1, the resumption of mining was renewed and from all outward appearances no strike or trouble of any sort is evidenced in any part of Wesley City.

Edwardsville—It is said that work will be started within a few days on the most modern coal-mining plant in Madison County. The Donk Brothers Coal and Coke Co., of St. Louis, is putting down the mine. It will mean the expenditure of approximately $500,000 and will give employment to 700 men when running at full blast. After the mine is in full operation the owners expect it to produce 5000 tons of coal daily, making it a rival to any mine in southern Illinois. The Allen-Garcia Co., of Chicago, has the contract for the work. The coal and air-shafts will be sunk simultaneously. Grading will be begun within a few days and the sinking of the shafts will be started Apr. 1. It is hoped to hoist coal by July 1. The coal shaft will be about 12 x 32 ft. making a double hoist of 12 x 16. This will permit large cages carrying coal cars with a capacity of three tons each. It has not been decided yet whether the company will erect houses for the workmen or whether the City of Edwardsville will have to look after this matter. Walter Clark, of Collinsville, will be the superintendent of the new mine. The Donk Brothers Coal and Coke Co. has been operating shafts at Collinsville, Maryville and Troy. The company has some mines which are well worked, and the new mine is to take the place of these.

ALABAMA

Risco—The new coal washery, crushing and screening plant of the Republic Iron and Steel Co. at this place, is nearing completion and most of the units will be placed in operation within the next two weeks. The haulage will be changed over to the new slope, from which a greatly increased tonnage will be taken.

OKLAHOMA

Broken Arrow—Tulsa County, Oklahoma, produced in 1918 a total of 200,000 tons of coal, according to figures prepared by Garland Marrs, president of the Seneca Coal Co., which is now opening a mine at this place. It is believed that this total will be exceeded in 1919, as mining operations are being carried on on a much larger scale. The Sand Springs Railroad Co. is preparing to build a railroad line from Tulsa into the new Broken Arrow field, which will mean the immediate development of this promising area. None of the companies operating in Tulsa County have yet found it necessary to limit their operations.

Foreign News

Vancouver, B. C.—The British Columbia Chamber of Mines is busy organizing an international mining convention to be held Mar. 17, 18 and 19.

Victoria, B. C.—The immediate future of coal industry in the Merritt (B. C.) field is reported to be uncertain. For some time the Canadian Pacific Railway Co. has been taking a considerable proportion of the output of that field for steaming purposes, a use to which the coal is well adapted. Recently it has been necessary, according to the operators, to increase the selling price because of the demands of men for more wages and the generally high cost of production. The company, apparently, does not care to pay at the higher rate and has cancelled its contract. If some arrangement cannot be made to continue the former business relations it is predicted that the collieries affected either will be forced to close down or to materially curtail their output. Hon. William Sloan, Minister of Mines, has been asked to assist in the effort to reach an adjustment of the difficulty, to which he has acquiesced; but whether the representations which have been made through him, as well as from other sources, will be effective is doubtful at the present moment.

Personals

J. C. Douglass is superintendent for the Dor-Mar Coal Co. at Savan, Penn., taking the place formerly held by **William Reid**, resigned.

C. W. Stafford has resigned his position as chief engineer of the Pond Creek Coal Co. and has opened a mine efficiency engineering office in Huntington, W. Va.

Albert Dally, Knightsville, Ind., has been appointed assistant mine inspector by the State Industrial Board, to succeed William Moore, of Terre Haute, resigned. Mr. Dally is a member of the United Mine Workers of America, District 11.

Herbert G. Parker, for many years with the Pittsburgh Coal Co. and recently Assistant Manager of Railroad Fuel Distribution, United States Fuel Administration, has been appointed sales manager of the coal department of the Iron Trades Products Co., Pittsburgh, Penn.

Lieutenant-Colonel Lloyd G. McCrum, who has been manager at the Rock Island Arsenal, has been discharged from the service and has returned to New York to his old position as manager of the W. H. Bradford Co. Mr. McCrum will also remain associated with the Victor Coal Mining Co. at Somerset, Penn.

J. Corbus Bushnell, formerly associated with the Business Men's Clearing House, Chicago, Ill., and until recently connected with the U. S. Employment Service as special agent to examine the personnel methods in vogue at Vickers Ltd. and Woolworth Arsenal, England, has been engaged by the General Engineering Agency, Pittsburgh, Penn., as personnel director.

A. S. Learoyd, during the past year Director of Distribution of the United States Fuel Administration, has been appointed assistant to the president of the Lehigh Coal and Navigation Co. Prior to Mr. Learoyd's connection with the Fuel Administration he was for many years employed as general freight agent by the Delaware, Lackawanna & Western Railroad Co.

Walter E. Hoots, formerly Northwestern sales agent for the Macon County Coal Co., of Decatur, Ill., with headquarters in Waterloo, Iowa, has resumed his position with this company after a year in the Navy. Mr. Hoots was discharged from the service in Boston the first of February, serving as a radio electrician at the U. S. Naval Radio School at Harvard University and aboard the battleships "Alabama" and "Kearsarge."

Wyman Eaton has been appointed chief engineer of Freyn, Brassert & Co., engineers, Peoples Gas Building, Chicago, Ill. Mr. Eaton was formerly connected with the engineering offices of Julian Kennedy, Youngstown Sheet and Tube Co., William Tod Co., Corrigan McKinney Co., and has recently resigned his position of engineer in charge of the rolling mill work of the Mesta Machine Co. to take up his new duties.

Lieutenant George Conway of the 27th Engineers, U. S. A., is in the General Hospital at Fort Douglas, Salt Lake City, Utah, recovering from an operation due to an injury received in France. Before enlisting as a private, Lieutenant Conway was assistant to A. C. Watts, chief engineer of the Utah Fuel Co. During a large part of his service in France, Lieutenant Conway was attached to the British Royal Engineers as a mining expert.

H. M. Crankshaw, general manager of the Cranberry Creek Coal Co., operating the Cranberry and Harwood collieries, has resigned and will return to England, where he will enter the engineering firm of which his father is the head. Mr. Crankshaw will be succeeded by **J. P. Warner** of Lansford, Penn., who was one time chief mining engineer for the J. B. Markle Co. at Jeddo and has been with the Lehigh Coal and Navigation Co., for some years.

Obituary

J. R. Richardson, engineer for the Black Mountain Coal Corporation, Evarts, Ky., recently died of pneumonia at the Harlan County hospital.

Wallace H. Rowe, president of the Pittsburgh Steel Co., and affiliated with other large corporations, died Feb. 1 at his home in Pittsburgh following a lingering illness. Besides being actively interested in a number of steel companies Mr. Rowe was also president of the Monessen Coal and Coke Co.

Harrison W. Matters, vice president and secretary of the J. Woolley Coal Co., Evansville, Ind., died Feb. 13 from a rare disease which involved a gland in his back. He had been confined to St. Mary's hospital, Evansville. Mr. Matters was first associated in the coal business with Jabez Woolley, following a period of railroad service. He was born at Vincennes, Ind., and was a graduate of De Pauw University, Greencastle, Ind.

Industrial News

New York, N. Y.—There was a well attended meeting of anthracite jobbers at the Whitehall Club on Tuesday of this week (Feb. 25) at which the matter of demurrage charges was discussed.

Pinesville, Ky.—Richard M. Lambert, receiver for the Calvin Coal Co., Pineville, in proceedings brought by the Matthew Addy Co., Cincinnati, Ohio, has filed notice that all claims must be presented by Mar. 3. Mr. Lambert has headquarters in the First National Bank Building, Cincinnati.

Milwaukee, Wis.—The Sterling Wheelbarrow Co. is manufacturing a wheelbarrow that has ten spokes instead of eight. The company states that this is an important improvement in the design of wheelbarrows, as the two additional spokes help greatly to strengthen what is the weakest part of the average barrow.

Chicago, Ill.—The Under-Feed Stoker Co. of America announces that it has removed its general offices from the Harris Trust Building, Chicago, Ill., to the Book Building, Detroit, Mich. This change will not interfere with the sales work of the concern's Chicago district sales office in the Harris Trust Building nor any of its other district offices.

Indianapolis, Ind.—The State Senate has passed Bill No. 79, introduced by Senator Bainum, providing for an increase in the salaries of the state mine inspector and his assistants. The first noted will receive an annual compensation of $2500, and the deputies $1800 each per year. The bill also provides for an increase in the present number of deputies.

Chicago, Ill.—The Chicago Pneumatic Tool Co. announces the removal of its Cleveland district office from Room 813 to Rooms 406-408 Engineers Building, effective Mar. 1. The new headquarters will provide excellent facilities for giving the best possible service to the company's expanding interests within the Cleveland district. Ross Watson is district manager.

Beckley, W. Va.—Subject to the action of the stockholders at a meeting to be held here on Feb. 27, the capital stock of the Hawley Coal Co. will be increased from one thousand to five thousand shares, so as to permit of the company taking over the leasehold, equipment and assets of the Combs Coal Co. At the same time it is proposed to change the name of the Hawley company to the Big Sewell Consolidated Coal Co.

New York, N. Y.—Delos W. Cook, state fuel administrator announced on Feb. 22 that on Mar. 1 the office of Federal Fuel Administrator for the city and State of New York will be closed and that this action automatically retires from office all county fuel administrators. Mr. Cooke in his order expressed his great appreciation of the coöperation of the public. Mr. Cooke, who assumed the duties of state fuel administrator last August, was at that time one of the vice presidents of the Erie Railroad Co. He succeeded in office A. H. Wiggin, of the Chase National Bank, who resigned in May last.

Charleston, W. Va.—Casualties in West Virginia mines in January reached a total of 28. As is usually the case, the largest number of such deaths were due to falls of roof, 28 losing their lives in that manner. Two met death through mine-car accidents and three through motor cars, while electricity killed one other. One man was killed in a premature explosion and two in handling explosives. There were five deaths outside the mines, two of which were caused by mine cars, three resulting from miscellaneous causes. McDowell had the largest number of accidents—seven—and Logan the second largest—six.

New York, N. Y.—The Pulverized Fuel Equipment Corporation has recently been organized for the purpose of taking over the business of the Locomotive Pulverized Fuel Co. The latter company had developed the "Lopulco" system for the preparation, distribution, storage, feeding and burning of pulverized fuel for steam generating and heating purposes. The officers of the Pulverized Fuel Equipment Corporation are: J. S. Coffin, chairman; J. E. Muhlfeld, president; H. F. Ball, vice president executive; H. D. Savage, vice president in charge of sales; V. Z. Caracristi, vice president in charge of engineering; S. G. Allen, secretary and treasurer.

Decatur, Ill.—The Decatur Association of Commerce has called a meeting of the large users of coal in this city for the purpose of ascertaining why Decatur factories and industries do not use Decatur coal exclusively. It is estimated that as much as 4000 tons of coal are shipped into Decatur each week, and the committee from the Association of Commerce figures that if all Decatur industries would use local mine coal that 160 more miners would be employed, which would increase the pay-roll to at least $275,000. The mining of coal used by one factory alone, if done in the Decatur field, would give employment for seventy more miners.

Huntington, W. Va.—Two hundred and fifty coal operators, representing practically every operation in the mine fields of southern West Virginia, eastern Kentucky and a part of Tennessee, have completed plans for the organization of the Central Coal Association. Colonel E. O. Dana, of Cincinnati, was elected president of the association, and Mr. Rodgers, of Pikeville, Ky., was elected treasurer. A board of directors was appointed by Colonel Dana, and the selection of a secretary will be made later. The headquarters of the association will be in Cincinnati, where the next meeting will be held Mar. 4. One of the main purposes of the new association is the publication of reports which will give the average cost of producing and selling, together with the maximum and minimum prices.

Jefferson City, Mo.—A bill has been introduced in the Legislature which provides that railroad companies must weigh all carload shipments of coal at point of origin or the nearest point at which track scales are maintained, and again weigh such coal at destination, if there be railway track scales maintained by the railroad company at such destination. Where there are no track scales the consignee would have the right to have the coal weighed on wagon track scales, and the railroad company would be compelled to accept the sworn statement of the person in charge of the scales, subject only to a deduction of 10 lb. for each wagon load to cover variations and errors. The railroad company is required to deliver to consignee the original weighbill and expense bill showing the gross tare and net weight at each weighing. The penalties provided are from $100 to $500 for each offense.

Charleston, W. Va.—Final action has been taken on the Hale Bill, originating in the House of Delegates, increasing the number of district mine inspectors in the state from 15 to 19 and their annual salaries from $2100 to $3000 per year. The measure also increases the salary of the chief of the department from $3600 to $5000 a year, and recreates the department so as not to run counter to the constitution of West Virginia. The bill makes no other changes in the mining laws of the state. Both houses have now acted on the Hale bill. There is a bill known as the Blizzard bill which has passed the House of Delegates and which provides that scales shall be installed at every mine where ten or more men are employed, and that all miners shall be paid by the actual weight of the coal mined. There is a proviso, however, that upon petition of half the miners in any mine scales may not be required.

New York, N. Y.—Charles S. Allen, secretary of the Wholesale Coal Trade Association has addressed a letter to each of its members asking expressions upon a number of propositions in order that the views of the members may be used as a guide to the course to be taken by the association upon the subjects. Some of the propositions are: Do you approve of filing sales contracts as suggested by other associations or in modified form; Shall the Coal Exchange be continued or discontinued temporarily; Shall the association take action with respect to matters of public interest; Do you approve of the proposed bill to restrict immigration for four years; Do you approve of the use of uniform contract forms; Will you support adoption of use of trade acceptances; Will you support a bureau of credit information by giving the information with respect to your customers; Do you approve of adoption of net ton basis for freight rates in order to place sale of coal on net ton basis; and, Do you propose to use the Tidewater Coal Exchange after March 1.

MARKET DEPARTMENT

Weekly Review

Operators and Consumers Waiting—Feeling That the Worst Phases of the Bituminous Situation Are Over—Stocks Dwindling and Production Falling Off—Anthracite Situation Still Deplorable—No Signs of Improvement

IF ONE wanted a phrase to convey tersely the present status in the coal market, he could do no better than choose the one made famous before our entry into the world war—"watchful waiting." Unlike other industries, the coal mines cannot store their product against the time when demand becomes active and an urgent call for fuel is again manifested. If the public does not buy coal, the mines cannot operate. Coal cars on railroad sidings the country over stand loaded with coal, all awaiting a market that is slow to materialize. It is inconceivable that this condition can long continue.

Reserve stocks in the hands of consumers are daily growing smaller. And speaking of reserve stocks, it is rather mystifying how the so-called non-essential industries, which were presumably receiving no coal whatever during the critical period, were discovered with large accumulations of fuel when the armistice was signed. But why uncover the family skeleton? Reserve stocks cannot last forever. Already many of the well informed in the bituminous branch of the coal industry profess to see a rift in the clouds, and a feeling of optimism is fast dispelling the gloom.

It cannot be denied that the closing down of the soft coal mines, with the consequent decrease in output, has served immeasurably to pull together the strings on what promised to be a loose market. Prices are holding well to the former Government maximums, and there is not the slightest indication whatever of a definite price-cutting policy. Most of the coal moving is in fulfillment of contracts made many months ago, few purchases of spot coal being reported.

With the nearing of the new coal year and the time for the making of new contracts, it can be stated that the worst part of the depression from which the bituminous industry has been suffering is over. In fact it would occasion no surprise if market conditions from now on should change for the better.

Production of soft coal during the week ended Feb. 15 is estimated at 7,761,000 net tons, a decrease of 3,887,000 net tons compared with the same week of 1918. (How the mighty have fallen!) The production for the coal year to date is estimated at 509,775,000 net tons, exceeding that of last year for the same period by 27,149,000 net tons.

The hard coal industry is still groping in darkness. In spite of the fact that many of the anthracite collieries have shut down, while others are working only part time, considerably more coal than the market can absorb is reaching tidewater. Domestic sizes are plentiful, thanks to an open winter, while the smaller steam sizes are glutting the market.

Retailers are not at all anxious to stock any more anthracite, preferring to clean up what they have in their yards while awaiting the schedule of summer prices. At this writing it is uncertain just what the future will bring forth in the hard coal market; there are no reassuring signs.

Anthracite production during the week ended Feb. 15 totaled 1,100,000 net tons, as against 1,444,000 net tons during the week of Feb. 8 and 1,854,000 net tons during the week of Feb. 15, 1918. The total production for the coal year to date now amounts to 84,907,000 net tons as compared with 87,383,000 net tons for the period Apr. 1, 1917, to Feb. 15, 1918.

WEEKLY COAL PRODUCTION

Bituminous—The production of bituminous coal during the week ended Feb. 15 is estimated at 7,761,000 net tons and is a decrease of 186,000 net tons compared with the week preceding and a decrease of 3,887,000 net tons compared with the same week of 1918. The daily average for the current week is estimated at 1,294,000 net tons as compared with 1,847,000 net tons for the coal year to date and 1,749,000 net tons for a similar period of last year. The production for the coal year to date is now estimated at 509,775,000 net tons and exceeds that of last year for the same period by 27,149,000 net tons.

Anthracite—Production during the week ended Feb. 15 is estimated at 1,100,000 net tons as compared with 1,444,000 net tons during the week of Feb. 8, and 1,854,000 net tons during the week of Feb. 15, 1918. The daily average per working day during the current week is estimated at 183,000 net tons and is equivalent to 60 per cent. of the daily average for the coal year to date and 58 per cent. of the daily average for the similar period of last year. The total production for the coal year to date now amounts to 84,907,000 net tons as compared with 87,383,000 net tons for the period Apr. 1, 1917, to Feb. 15, 1918.

Carriers' Reports—Reports received from the carriers for the week ended Feb. 15 show increased loading during that week over the week preceding in central Pennsylvania, Ohio, Tennessee and Kentucky, and the district including Iowa, Texas and the southwest States. Decrease occurred in all other fields, the southern West Virginia fields falling behind the most—1153 carloads or 8 per cent.

New England Shipments—Shipments of bituminous coal to New England during the week ended Feb. 15 are estimated at 240,971 net tons, as against 286,433 net tons during the week preceding. The rail receipts through the New England gateways were in excess of that of the preceding week, and amounted to 119,040 net tons, while tidewater shipments, amounting to 121,931 net tons, fell considerably below the shipments during the week ended Feb. 8, which amounted to 176,369 net tons. All harbors report a decrease in tonnage loaded, with Hampton Roads falling behind the most. The tonnage loaded at this harbor, during the week ended Feb. 15, amounted to 59,637 net tons, as compared with 107,665 net tons during the week of Feb. 8.

Tidewater Shipments—Bituminous coal shipped from the North Atlantic ports and Hampton Roads, during the week ended Feb. 15, amounted to 526,085 net tons, as compared with 670,445 net tons during the week ended Feb. 8. Shipments during the week from Baltimore increased slightly, while shipments from New York and Philadelphia fell approximately 9 per cent. behind the tonnage shipped during the week preceding, and shipments from Hampton Roads amounted to but 58 per cent. of the tonnage shipped from the same port during the week of Feb. 8.

Beehive Coke—The production of beehive coke in the United States during the week ended Feb. 15 is estimated at 422,000 net tons, as compared with 501,000 net tons during the week ended Feb. 8 and 560,000 net tons during the corresponding week of 1918. The average production per working day during the current week is estimated at 70,000 net tons, as against 84,000 net tons, during the week preceding, and as against 93,000 net tons during the week of Feb. 15 of last year.

BUSINESS OPINIONS

Marshall Field & Co.—Current wholesale distribution of dry goods is running considerably less than for the same week of 1918. Orders for immediate delivery from road salesmen were of greater volume than for the corresponding week last year. Fall lines have not yet been opened. More merchants were in the market seeking immediate requirements for stocks depleted by excellent retail business which still continues. Collections were satisfactory.

Dry Goods Economist—Purchases of the retailers during the week indicate that present conditions in the dry goods trade are exceptionally good. In New York and in Chicago wholesale houses it is noticed that retailers are buying for every department. This is taken to indicate the free movement of all lines of goods. As a rule the goods now being ordered are wanted at once, and in many cases it is evident that the ability to make immediate deliveries is regarded as of more importance than the possibility of the price being shaded at a later date.

American Wool and Cotton Reporter—Buyers of wool are having their difficulties in securing it from the foreign markets. In South America there has been labor trouble, and in South Africa there seems to have been delay in cablegrams. It is felt by some that after the London sale in April that the basis for the world market prices on wool will be more definite. The cotton market does not show very much activity. The surprise of the week was the January consumption report, which showed an increase of 15 per cent. or more over the previous month regardless of curtailment, labor unsettlement, etc.

Bradstreet's—While reports as to trade and industry have not greatly changed, the more cheerful feeling noted last week, particularly in the territory west of the Mississippi, is fully maintained, and in addition there are reports from larger eastern centers that price reductions in textiles have seemed to bring about freer trading. Proof that talk of enlarging export trade has had a really good and sufficient basis is at hand in the excellent export statement for January. Contributory to the spread of better feeling also has been the sustained and accentuated strength of the stock market, which has witnessed the retreat of a rather extended short interest, moved thereto by the favorable tenor of reports from the Peace Conference and the prospects that the movement for government operation or ownership of the railroads has been checked. Liberty Loan bonds have been aided by prospects of a change from long to short term issues.

Atlantic Seaboard

BOSTON

All-rail prices not so soft. Operators in most cases follow conservative policy. Recent Government bids reflect this tone. Railroad buying looked for only in a small way for the present. Tidewater shipments spasmodic from Hampton Roads, but dumping light at other ports. Shipping Board announces its lack of interest in New England coal freights. Shippers will get restive when any buying starts. No prospect of active market for months to come. Stocks apparently as large as ever. Anthracite extremely dull. Outside freights a notable factor. Company barges swinging at anchor, instead of rates being modified to meet conditions.

Bituminous—A slight change in the New England situation can be noted this week. There are fewer reckless quotations all-rail than has been the case since Jan. 1. Instead of prices on fair to good grades being ragged around $2.50@2.85 per net ton f.o.b. mines and $2@2.40 for inferior coals, quotations seem to have settled into grooves on a higher range, especially for those of better quality. This territory is still being closely canvassed for new business, but evidently the operators have taken a hand and made it plain to sales agents just what prices they would accept for current output. The result is all the better for the market, for the few buyers who are now interested will have more confidence. It is apparent also that even on the scattering business that is to be had there is more discrimination between grades. So much poor coal was dumped into this market last year that shippers are now obliged to state pretty exactly what coal is to be furnished. That the whole situation all-rail is slightly firmer is a good sign, and foreshadows a better market in general when other conditions improve.

The fact is that operators are today following a close-hauled policy, in most cases. In central Pennsylvania there are a lot of mines shut down, but those that are at all in operation are generally insisting upon remunerative prices. Operators who produce good to high-grade coal are holding to the recent Government figure, if they do not ask more, and while orders are few they are apparently willing to put out only one-fourth or one-fifth their usual tonnage rather than reduce prices, when they are not at all certain that lower figures would to any extent increase their tonnage. While they pursue this policy there will be some encouragement for the future of the market.

Recent Government bids confirm this attitude on the part of operators. The Watertown (Mass.) Arsenal, for instance, recently invited proposals to furnish 10,000 tons at the rate of two carloads daily from Mar. 10. The only bids were on coals that would appear on the Navy acceptable list; on one was quoted $3 per net ton and on the other 5c. less. Of course, it should also be stated that these coals had to be submitted on rather rigid specifications, but they will come near enough the limitations named so that there would probably be little correction in price for quality. These bids were somewhat of a surprise to the trade here, which had become accustomed the past two months to a much lower price level even on good grades.

The conference on Feb. 18 in Washington with regard to the coal-purchasing policy of the Railroad Administration has apparently had no direct result on the railroad fuel situation in New England. The tonnage in storage is still very heavy and any prudent management would come pretty near insisting that this coal be used before any comprehensive purchases are made. It is true, also, here as in other sections, that only a small percentage of the coal now being used is not covered by contracts made at a time when the Fuel Administration very strongly counselled such action. These are among the reasons why there will probably be only light buying on the part of the railroads for weeks, if not months, to come. The volume of traffic in this territory is still far from heavy and railroad consumption is much less than a year ago.

While a considerable tonnage is coming forward from Hampton Roads on contract the movement is irregular and spasmodic. One week may show quite an increase as compared with another, but the average is low, and the agencies are still wondering where coal is to be placed when current contracts expire. The textile mills continue on short time, and practically all the industries are using less coal than has been customary the past two years. The export market is not developing the way it was hoped, and except for Navy purposes current demand is light. Dumping at Baltimore, Philadelphia and New York is much less than at Hampton Roads, and in some of the pools there is no movement whatever. It is reported that 170 mines are shut down in the Fairmont district alone, and with current marine freights and the differentials in favor of all-rail delivery from central Pennsylvania, it is hard to see how there can be much improvement. The use of the Tidewater Coal Exchange ceases to be mandatory on Mar. 1, and it will be interesting to see to what extent the larger shippers withdraw from pooling arrangements.

Little is heard of prices on Pocahontas and New River, since practically all the tonnage coming forward to this market now is on last year's contracts. Market cargoes still meet with hard going, and it cannot be said that any of the grades ordinarily received here by water are being absorbed any better than has been the case since the year opened.

At last the Shipping Board has made a declaration of policy with regard to coastwise coal freights for the near future. During last week a stereotyped telegram was sent in answer to all inquiries and offers of the past 60 days to the effect that the demand for tonnage was so good in other directions that the Shipping Board "was not particularly interested in New England coal freights," and that rates on requisitioned tonnage would remain unchanged for the present. In other words, the owner of a steamer, 2500 tons and upwards D.W. capacity, "requisitioned" in 1917 by the Shipping Board, must charter at $3.50, Baltimore to Boston, or tie up his ship. The rate is mandatory, and no intimation is given of a possible change. While the steam trade is in its present posture there is perhaps no great injury being done, but once there is an active market for fuel there is sure to be some loud talking that will be heard at Washington. The whole rate situation needs revision, and such a revision cannot come too soon for New England, or there will be trouble next fall and winter.

The indication that there will be no active market for several months is one of the dangers in the present situation. Manufacturers now have such heavy supplies on hand it is quite within the range of possibility that they will overdo a non-buying policy. It is now very plain that operators intend to keep coal in the ground unless what they consider a fair price is offered, and should this general situation continue until June, as there are signs it may, there might be real difficulty about getting forward coal for those industries who will need volume shipments once they begin buying. This will be all the more complicated if the present glaring differential between rail and water delivery is allowed to continue.

Anthracite — The demand for domestic and all sizes of anthracite continues extremely dull. The retail dealers are having no business, partly because of the mild weather and partly because so large a share of the season's business was done last season while the scare was on. Without doubt another factor is the present scale of prices. No dealer will take on coal much in advance of actual need, so great is the uncertainty over what will happen in the spring. The trade seems to feel that although there is a program on the part of operators that calls for a 50c. advance over present prices by Sept. 1, it will be hard to make the public think any such advance is justified. Of course, it is the delivered price at this end that gives them most concern. The proportion moved by the all-rail route has very largely increased the past two years, but there is still a large tonnage that must be taken by water. It is the high range of water freights on anthracite as well as bituminous that gives many dealers much concern.

On Dec. 28 the Railroad Administration, after months of consideration, advanced rates on railroad-owned barges, although at the time outside transportation in the open market had begun to offer at less rates, due to the slackening demand. Now that owners of these outside barges are trying to get charters at rates that run from an even dollar to points like Providence from New York to $1.35 to Boston, while railroad-owned barges are still held at $1.75@1.80, the discrepancy is too great to enlist any buying of company coal to come in the higher-rate barges. The result is that the latter swing at anchor, mines are shut down, and retail dealers run on as light stocks as possible, naturally preferring the all-rail route for such current supply as they may need.

NEW YORK

Coal industry in serious condition. Operators fear the outcome and discuss remedies. Demand slackens and buyers hesitate. No prospects of spring improvement. The bituminous market stronger, following tidewater clean-up. Worst is believed to be over.

Anthracite—Conditions in the anthracite market are unprecedented. Tradesmen who have been in the coal business for years declare that the situation has never been equalled. "Dead" is the way the situation can be summed up in a single word. There is no demand, and there is no opportunity for salesmen to dispose of a few cars of coal even at a sacrifice.

Salesmen returning from their trips inland report "mountains of coal" in the retail yards. Bins are filled and most retail dealers have good-sized stocks on the ground.

That the industry is in a serious condition is reflected in the meeting of operators held here on Feb. 21, at which time the situation was thoroughly canvassed and remedies suggested.

"More coal than we know what to do with" is the way the situation is being sized up by many dealers, and notwithstanding the curtailment policy adopted by the operators there is too much coal being sent to market.

Operations which have been on about a half-time basis for a few weeks are working still less time now, but this does not appear to decrease dumpings at the local docks, which for the week ended Feb. 21 were 3732 cars, an increase of 323 cars over the previous week.

Efforts to send coal westward are not successful, as that section is well stocked. Similar reports come from New England, while on Long Island the dealers are flooded with coal.

There is no prospect of buying improving before operators make some definite announcement regarding spring prices. Many rumors are heard, but so far no definite announcement has been made.

Many reports are heard regarding price concessions. Quotations for so-called Independent coals in many instances are said to be 20c. below company schedule. Demand for the larger of the domestic coals is about evenly divided, with little moving. Pea coal is difficult to dispose of, although large concessions have been offered. Efforts to ship this size into the West have proved unsuccessful, dealers reporting full stocks.

The cut in production is having its effect upon the anthracite steam coal situation. Stocks are not burdensome, but there is plenty to meet all requirements and producers are storing considerable quantities.

The retail situation is quiet. Dealers report little business and an inclination on the part of consumers to refrain from buying in expectation of the usual spring discount. If it is not forthcoming it is unlikely that buying will be heavy this summer, and most consumers are likely to hold off until early fall before ordering their next winter's supply of coal.

Bituminous—Operators and shippers are in a better frame of mind regarding the situation. There is not so much gloom about and the opinion seems to be strong that the bituminous market has turned and the worst part of the depression is past.

There has been a general clean-up at the local tidewater docks, and while the immense surplus has not been entirely wiped out the quantity of coal on hand is not large enough to cause any further apprehension. Shippers are obliged to dispose of their holdings here at concessions below the former Government maximum

price, but quotations on coal at the mines are much stronger. Accumulations at the docks have been reduced and efforts are being made to prevent a recurrence of the former trouble, due in most part to overshipments.

Operators and jobbers report many more inquiries, the result of reduced stock piles and the nearness of the new coal year, when contracts expire and new contracts begin. So far neither operator nor consumer has shown any hurry to sign up for the next twelve months. Nearly every operator has a different view of the situation and, of course, wants to make the best terms possible. Consumers are not willing to sign up at the present high prices asked, believing they are going to get coal later in the season at less than the prices quoted now and are willing to take chances, feeling they have nothing to lose.

One form of contract heard of provides for a readjustment of prices every three months. This form has found favor among some tradesmen, while there are others who favor the flat price for the entire year.

Nearly every day reports are heard of various manufacturing concerns substituting oil for coal for generating power, and it is said that the plan is being considered by other industries.

Dumpings at the local piers for the week ended Feb. 21 were 6248 cars as compared with 5624 cars the previous week, an increase of 624 cars.

The retail price of bituminous coal in Manhattan and the Bronx was reduced 25c. per ton on Feb. 21, the price now being $7.25 per ton. This is the second change in retail prices put into effect by the retail dealers in these two boroughs since the removal of price restrictions by the Fuel Administration, the first reduction affecting anthracite coals.

PHILADELPHIA

Anthracite dullness continues. Collieries on short working time. Retailers say big business done for the season. Pea coal trade vanishing. Reason sought for lack of ordinary demand. Sales now all based on circular prices. Some little retail price cutting. Independents cut prices in few instances. Rumors of spring price advance. Buckwheat only steam size in demand. Bituminous very quiet.

Anthracite—With the collieries that produce the very best grades of anthracite shutting down two and three days a week for want of orders, it is probably unnecessary to go further in commenting on the condition of the market. That the largest operating company sees fit to advertise in the daily press that it is prepared to make immediate shipment of all sizes is another unusual feature for the month of February.

The dealers are being reluctantly forced to realize that their business is about over for the season, for the prospect of any prolonged spell of cold weather is not at all good with the first of March almost here. With the vanishing of their hopes for this month, many of them feel certain that March will surely bring numerous small orders that will help in reducing the very heavy stocks which they have on hand of all sizes and which they are anxious to move in the event of any spring reduction.

All the retailers are in a quandary as to why they have lost so much of their pea coal business, as there is scarcely a yard that is not over-supplied. The operators are also giving much thought to the question, and it is becoming a serious problem with some of them. We have this week interviewed some of the largest buyers on this subject, but they are unable to cast much light on the matter. There are some who claim the fault lies entirely with the size itself. It will be remembered that acting upon a suggestion of the fuel authorities, and in order to increase the tonnage for family use, the operators quite willingly changed the size of the screens thus permitting a larger percentage of buckwheat in the pea coal than was allowed by the old standard of preparation. This, some dealers say, has caused the customers to complain and refuse to continue to pay the prevailing high price for it; and they have in the meanwhile changed to chestnut, apparently with much satisfaction.

Other dealers, including some of the representative ones, insist the trouble rests solely with the price. They say it is unreasonably high and that the difference between it and chestnut is too small, which just now is $1.60 per ton on the delivered price. It is known that a number of the operators are listening with interest to both sides of the controversy, for it is becoming apparent that something must be done to improve the sale of pea coal if it is to continue to hold its high place among the family sizes. Undoubtedly they dread to look back to the old days when it was looked upon only as a steam size. Right at this time the independent operators are experiencing the most trouble with this size, on account of the cars standing at the mines loaded with this size accumulating demurrage and with no storage yards to dump it.

Just as every operator has adopted the same price, not forgetting that the middle houses' "brokerage fees" have also been abolished, so have the dealers pocketed the loss on all individual coal in stock, and announced the same rates to the public. These are based on company circular plus freight and the retained gross margin of $2.50 per ton.

To date there have been remarkably few instances of retail price cutting among the dealers, it being confined principally to those dealers who formerly indulged in this practice. However, it is noted that where the rates have been reduced they have not materially increased sales. The prevailing retail rates are egg $10.30, stove $10.55, nut $10.65, pea $9.05. Among the cutters the lowest prices offered are a flat rate of $10.25 for egg, stove and chestnut, with $8.50 for pea.

We hear that dealers located along the lines of the Pennsylvania Railroad complain because they pay a higher freight rate than their competitors along the lines of the Reading. Of course this made little difference in the historic months just past, but with business falling back into usual channels it now affords an opportunity for the retailers to claim a concession. No doubt some of the independent operators are willing to absorb the difference, and we know that some of them have cut far deeper into the so-called circular than this, but the companies have so far refrained from making any such allowances. Among the individuals we have heard of prepared coal being offered for as much as 50c. off circular, yet even at that price they find difficulty in placing coal. We know of a dealer offered pea coal at a liberal concession and who accepted it simply as a favor to the shipper, as he put it, because he had treated him right during the war. However, price cutting by the independents is far from general, as they claim they are doing business at a loss even at circular price on account of the short working time of their mines with the lessened production. Such concessions as are given are simply to move coal that is accumulating demurrage.

One amusing feature in making the trip around the offices of the retail trade is to hear the dealers actually admit they made money in the past year. During those strenuous days they made pitiful pleas for coal and gave one the impression that the cost of labor, etc., was taking up the entire gross margin. Now we hear them admit it was the best year they ever had, and judging from the remarks of quite a few, the war contained few horrors for them.

Naturally there is much speculation as to April prices. As a whole the trade seems convinced there will not be the usual decline. While no shipper will risk a definite statement to his trade to this effect, they appear to be giving that impression. Also is the feeling growing that prices will advance. Some high in the trade predict that commencing May 1, and taking the present circular as a basis, prices will advance 10c. a month for five months. As the labor question is one of utmost importance with all large employers, so it is to the forefront with the operators. We believe it is justly claimed that they cannot reduce prices and assume the loss; and to reduce the wages of the miner is a proposition fraught with much danger.

Practically all dealers anticipate going through a dull period, some claiming it may last until early fall. They intend to watch collections closely and avoid filling the bins of their customers during the coming spring and summer with next winter's coal and waiting for the money until they commence to burn it, as has often been done in the past.

Notwithstanding the poor prospect for the immediate future of the coal business we hear of a number of prospective buyers who are apparently anxious to embark in it, but there are no yards in the city for rent and few if any for sale. In the case of a yard sold recently, there were half a dozen real buyers in sight, five of whom were bitterly disappointed when they found the other fellow had got it at a good figure.

We know that most operators have been embarrassed by having coal standing at the scales and on demurrage for want of orders, which accounts for most of the low prices quoted. Egg, pea and the steam sizes are causing the most trouble here. What business there is continues to be chiefly stove and chestnut, but with all the salesmen on the street and showing unusual activity there is competition for every order.

In the steam sizes buckwheat coal is the only size for which there is any demand, and while the companies stick closely to the $3.40 prices many of the individual shippers are selling for less. Barley and rice are extremely heavy and the big companies continue to put fair tonnages into the storage yards on account of the lack of sales.

Bituminous—The market fails to gain in strength. All operators report their mines on short working time and consumers are loath to buy. Of course the heavy stocks on hand are being fairly well used up, still it will be months before anything like active calls for fuel will be made. Shippers of the better class of coal are insisting on the price of $2.95, or thereabouts, for their output, athough there are plenty of offers of $2.50 and even lower. The consumer, though, has learned much about coal and is quite dubious of the quality of coal offered at the low prices, as much of it is of most doubtful quality. For strictly blacksmith coal the price range is $3.25 to $3.50, with a fair amount taken.

BALTIMORE

Demand for soft coal continues flat and an oversupply of fuel at tide is still noted. Prices are weak and regulated largely by individual circumstances of sale. Government changes pending. No snap to hard coal selling.

Bituminous—There is little market for soft coal here. The supply at this point is excellent as to quality and more than sufficient as to quantity. It is one of those markets where it is difficult to quote a price range even as sales are largely dictated by individual sale circumstances. Probably the most interesting feature here is had in expected changes due to coming Government regulations being dropped. The shippers have been told that there will be an abolition of the no-consignment rule of the Fuel Administration after Mar. 1. This will enable coal to be reconsigned after reaching consignees here, where in such a market as the present it is not infrequently declined. The ordinary railroad switching charge would then be effective as compared with the present requirement under the "no-reconsignment" order that the coal be reshipped at the full mines-to-city rate with an added tax of a special shipment nature. That changes are due in the pool orders is also evident. Coal will soon be running in quantity direct to the piers from producers who desire to load on ships, lighters, etc., outside of pool regulations, thus restoring the competition as to class fuels. Whether the pools will be abandoned completely is a question, for while the majority of larger coal shippers and producers seem to favor some such move there is a considerable element in the trade that favors a continuance of the pooling arrangement under Government control. The Federal Railroad Administration is also said to be favorable to an upkeep of the pooling plan.

Anthracite—The anthracite market lacks any element of snap. The users of fuel who are running low are ordering in one-ton or even half-ton lots, encouraged by the unusually mild winter to believe that an exceptionally early spring may save them from buying in a market which is popularly regarded as top-notch as to price. This sort of buying makes the dealers cautious in orders for the month, and the inducement of independent mine offers of coal at company mined prices a little inducement at all when company mines are closed part days some weeks in order to prevent an over-supply. Even now there is more hard coal here than can be put out promptly, and the yard stocks are slowly mounting despite the effort to hold them down.

Lake Markets

PITTSBURGH

Operation between 25 and 30 per cent. Two sets of market prices. Decreasing consumption.

The coal situation still drags along a weary existence. It is a case of allowing stocks to be liquidated, and the operators seem to be getting along quite well in restricting their operations to the actual demands of the market. Production is between 25 and 30 per cent. of capacity, many mines being closed entirely, while those that operate generally run at between

40 and 60 per cent. capacity. There are two markets, one the regular market for coal to be mined and the other the market for odd lots that through mischance or design have been loaded on cars and must be moved to save demurrage. Such coal frequently goes at less than $2, but the total turnover is small.

The season circular price of $2.50, 15c. over the former Government limit, has not been formally withdrawn, but is a dead letter except as to high-grade gas coal, which occasionally brings up to $2.60 for ¾-in. Byproduct coal and ordinary gas coal generally bring about $2.35, with occasional shading. The general market is quotable roughly at $2.10 for slack, $2.35 for mine-run and $2.50 to $2.60 for ¾-in. gas, per net ton at mine, Pittsburgh district.

Railroad consumption of coal has fallen off, as has consumption by the steel industry, which each week operates at a lower rate than the previous week. The steel mills in the Pittsburgh and valley districts, however, are doing better on an average than mills elsewhere, most of them operating at between 60 and 90 per cent. Many small detached mills are closed entirely. There is almost as heavy coal consumption as formerly by the byproduct coke ovens. It was owing to the indifference of byproduct coke operators that the Geological Survey had to discontinue the weekly report of production, and it is not certain that the proposed monthly reports can be carried on. While stocks of coal held by consumers have been decreasing they are still a factor, and a late opening of lake coal shipments is expected, so that it may be quite a while before there is much improvement in coal demand.

Miners in some sections are reported as being in a restless mood, but in general the miners understood that the operators are curtailing operations for the purpose of maintaining the market and recognize that this is desirable if their wages are to be maintained.

TORONTO

Market remains quiet. Dealers doing business at a loss. Large stocks on hand. Some price-cutting in bituminous.

The demand for coal though far below normal at this season shows a slight improvement, but is mainly confined to the class of small consumers who buy only for present requirements. Dealers who laid in large stocks as soon as the opportunity offered are carrying on business at a loss and claim that the present price of $11.50 for anthracite leaves no margin for profit. Several of the smaller dealers have suspended business. There is no change in the situation as regards the demand for bituminous, which remains limited, but prices are generally well maintained, though in some cases deductions are being made in order to push sales.

BUFFALO

No improvement in coal demand. Bituminous moving slower than ever. Mines shutting down when orders run out. No move to load anthracite into vessels.

Bituminous—The trade slows up perceptibly, for the industries of the country are not yet active. The factories do not know what to do. Everything costs so much that the consumer is buying as little as possible. So long as this state of things lasts the consumption of coal must be light. From all sides still come reports that stocks are heavy and not running down, for the seller somehow manages to get enough coal into consumers' hands to keep the supply up.

At the same time the prices are strong. Less report is heard of cutting than when the Government price was dropped. The fact is that it would take a disastrous reduction now to interest the consumer. He does not call the prices so very high, but he has coal enough and often has no more room for it. How, then, can he buy? So all that can be done is to sell a little here and there. It is likely to last quite a long time, perhaps till the labor deadlock is off. Capital cannot see a return dollar for a dollar spent at present figures, either for material or for work. The effort to keep all prices up may succeed, but it is not much of a success yet.

Meanwhile the bituminous jobbers are uneasy. They have a hard time to make a living and they see nothing better ahead. The question with most of them is whether they can go on in this way till business moves again. Even those who did fairly well awhile ago are now complaining with the rest. They believe their poor sales are due to a falling off in consumption. The only improvement in the situation is that the refusal to reconsign cars will be given up at the end of the month. The rule requiring them to guarantee freight on the shipment of slack into Canada is not regarded as a great hardship. They do not believe it will be strictly enforced, any more than it was previously.

Shutting down the mines is now the rule, just as soon as the coal begins to accumulate. It will not answer to send it out on consignment, for a loss is pretty certain and sometimes it is heavy. The margin, either to the operator or to the jobber, is too small for anything of this sort. Meanwhile the prices are strong.

Anthracite—The announcement that the price is to be allowed to advance 75c. a ton will astonish most of the trade, as only 50c. seems to have been asked. It will do what it can to make this coal a luxury. Maybe that is what the producers are after, for the supply is not everlasting. At the same time the mines that were allowed a margin over the others are down to the general level and finding it hard to sell their output at that.

The demand is everywhere light. Many orders have been cancelled lately, for February is turning out not to be much colder than were the other winter months. The anxiety expressed by distributors some time ago lest there should set in a severe spell of weather lasting some weeks and so create a shortage of coal is now about laid aside. The supply is no doubt sufficient for all emergencies and every day makes any sort of stress less likely. What is now troubling many consumers is how to get rid of the substitute fuel that they have laid in.

Nothing more is said of loading lake coal. The upper lake supply is so large that nobody there wants any early, so the thing is to wait and let the spring take care of itself. If loading a good-sized fleet here right away would take care of the surplus it might be undertaken, but as it would not the best thing to do is to wait. The miscalculations made in the estimates last season have produced a decidedly embarrassing result, but that is now a matter of history. It does not appear to have been avoidable.

CLEVELAND

Both the steam coal and domestic markets continue to mark time. A slight stiffening is noticed, chiefly because of the 25c. increase in Pocahontas at the mines. Receipts in northern Ohio still are about 40 per cent. of normal. The cheaper grades of steam coal can be had all the way from $2.15 to $2.60—the last Government maximum.

Bituminous — Statements, predictions, speculations and hopes that business will be revived are more numerous now than at any time in the past month; but, like all that has gone before, the improvement appears to be confined to the printed page. Industry in northern Ohio continues to operate at about 50 per cent. of capacity. Roughly, about 40 per cent. of this operating percentage is being done by power generated from stock-pile coal. The state of the steam-coal market thus becomes obvious.

Local operators are living in the future and look forward to the opening of navigation on the Great Lakes, which now is only five weeks off. But even this does not fill some No. 8 operators with optimism, for upper lake dock men appear more strong for Pocahontas—now that it is once more obtainable—than ever before—and considerable No. 8 coal will be crowded out of the lake market. In the meantime, operators are keeping mine operations apace with demand, and three days a week is a mighty good schedule for southern and eastern Ohio.

Car shortage is a subject not now discussed; it may be said to exist no longer. Labor at the mines is becoming restive, but is showing no inclination to accept a lower wage in order to stimulate business. In several cases operators have put out feelers among their mine workers, but acceptance of a lower wage apparently is something foreign to the thinking of the workers.

The larger operators are standing pat on the Government maximum, but steam coal can be had in varying tonnages from $2.15 up to $2.60. Some coal has been said to have been tendered at less than $2.15, but the range from $2.15 to $2.60 pretty nearly represents the market. A steam-coal user can buy fuel within those limits according to his luck in happening on to car service coal and what is understood to be second-grade coal.

Pocahontas lump has finally made its appearance in quantity and is retailing at $7.50. Run-of-mine is priced at $7.20. Its competitors are anthracite at $10.85—which is a reduction of 40c.—No. 8 Pittsburgh at $6.35, Massillon lump at $7.10 and West Virginia splint at $7.15. On account of the small demand for slack, Pocahontas operators have added 25c. to the price at the mines. This has served to stiffen the market for all grades, although a slight raise would add strength to the market's present weak state. Domestic demand shows a slight increase as colder weather has set it, but it cannot compare with normal.

Anthracite—The promised reduction of 40c. has been made in domestic anthracite, which is now priced at $10.85. The incoming of Pocahontas has cut slightly into the demand for anthracite.

Lake Trade—The trade continues without word of a reduction in demurrage rates, which is held indispensable to the abandonment of the Great Lakes coal pool. If nothing is done prior to the end of March the pool will be continued in a way, it is said. "Private" pools, such as has been conducted at Huron, Ohio, by three large lake shippers prior to the larger pool, probably will be resumed. In the absence of a new price the last one is holding, but this is still open.

DETROIT

Little buying is being done in bituminous by either the steam or domestic trade.

Bituminous—Orders for bituminous are not coming out freely, jobbers say, notwithstanding some recent predictions that the removal of Federal zone rules and control would impart considerable stimulus to the market. Under more normal conditions such a result might have followed the lifting of Government barriers. The situation in the local market at present, however, may be described as abnormal, made so by the excessive supplies of bituminous in reserve at the steam plants and the storage yards of the retail dealers.

The working down of these supplies is not proceeding rapidly. The factories are using less coal than a few weeks ago. Instead of running at capacity production, the cancellation of Government contracts has left many in a position where operation is limited. The restoration of before-war business is being attempted, but in many instances obstacles are encountered such as delay by the Federal Government's representatives in completing settlement of claims of contractors and the lack of promptness in removing equipment installed by the Government for war work, which is now in the way of the equipment that must be replaced to resume business on products turned out before the war.

Unusually mild temperatures have interfered with the movement of coal from retailers' yards, by curtailing demand from domestic consumers. The retailers who bought large quantities of bituminous, expecting their customers would be largely dependent on that form of coal, owing to restrictions on the use of anthracite and its limited supply, saw part of their prospective market taken when the Fuel Administration regulations were relaxed to permit use of coke by householders to the full limit of their needs, and again when restrictions were lifted from the use of anthracite.

Anthracite — Supplies of anthracite are apparently adequate to meet all present requirements. While shipments are not large, weather conditions have aided in conserving stock. Numerous Detroit retailers are advertising their ability to supply domestic requirements with any form of anthracite and in unrestricted quantity. The plentiful supply of coke that has been available recently has lessened pressure for anthracite.

COLUMBUS

The coal trade in Ohio is quiet. Little change has been noted, as the weather continues warm. There is a slight increase in the steam demand. Prices remain fairly steady

The Ohio coal trade shows little change during the past week. Demand is still limited to small orders and there is no disposition to stock up under present circumstances. The steam business is showing a little more activity in the way of inquiries, although orders are not numerous. Taking it all in all the trade is playing a waiting game, to see what happens before buying fuel. Prices are fairly steady at former levels, although there is considerable cheap coal on the market.

The retail trade is quiet, as is inevitable when the unfavorable weather conditions are taken into consideration. Retailers are loath to buy under present conditions and are content to try to clean up before spring. There is still some demand for Pocahontas and other fancy grades, but the bulk of that business ha been taken

care of. Retail prices are still maintained at the Government levels. The demand is limited, as it is realized that cutting would not stimulate trade to any extent. Rural dealers are probably doing the best business at this time.

Steam business is slightly more active, especially in the way of inquiries. A canvass by salesmen shows that the larger consumers still have large surplus stocks and will not be in the market for some time. This is especially true of the rubber plants and iron and steel mills. General manufacturing on a peace basis is slow in getting started. The railroads are buying a larger tonnage, but not nearly what the war period required. Public service corporations are probably the best customers at this time. There is some cutting of prices on current business in steam circles, but contracts are still maintained. Operators are now figuring on the renewal of many steam contracts that expire around Apr. 1.

Production in all Ohio fields has been rather light. Estimates show that the Hocking Valley mines produced about 25 to 30 per cent. of normal and other fields in the Southern field about the same. Eastern Ohio is credited with about 30 per cent. of normal.

CINCINNATI

General dullness in the market continues, with consumption below contract deliveries and spot demand at zero.

The absence of demand that has characterized the market for some weeks continues unabated, with no indication whatever that any improvement is to be expected in the near future. So far there has been no effort at stimulation by the expedient of sacrificing prices, as it is generally appreciated that the situation is due solely to an absence of need for coal, and that nothing but demoralization would be the result of price-cutting.

In some instances shippers find it difficult to get large consumers to accept deliveries on contracts, although this situation is not giving rise to any great complaint. The principal anxiety in this market is how soon and how extensively it will be possible to revive business in the West and North, as it is realized that this will depend considerably upon the amount of coal carried over.

It is hoped that the convenience with which the winter's supply was stored and the widespread dissatisfaction with cheap fuel delivered not only here, but especially in Western markets, in place of the accustomed high-grade coals, will make it comparatively easy for producers and handlers of first-class coal to make arrangements for the sale of it. The real suffering in the scramble for business, it is naturally felt, will occur among producers of low-grade coal. For the better grades that comprise most of the coal moving through this market there is no real anxiety regarding market conditions later on, when industrial conditions will have improved and the customary spring activity will be in progress.

LOUISVILLE

General market stagnant, with fair demand for better grades of domestic. Steam coal generally draggy. Prices being well maintained. Expected improvement about Apr. 1.

The situation is showing little improvement at the present time, due to continued mild weather, small demand for domestic and a much smaller demand for steam. Domestic can only be produced at high cost due to inability to dispose of screenings and small sizes, with the result that operators are getting a premium of 20c. to 30c. per ton on domestic, and taking a similar reduction on steam.

Mines are continuing on a two- to three-day basis, with only the larger mines making any real effort to run. Low-grade coals are hard to sell at any price, and operators in such fields are having much difficulty in marketing their product.

Western Kentucky operators are making a hard fight before the Interstate Commerce Commission for better freight rates into the Chicago territory and also into the South, present rates making competition almost out of the question.

Although February is almost over and no ice has been encountered in the Ohio River, movement of river coal continues at a standstill, there being only a few small tows coming through. For a time the rail operators of Kentucky were much worried concerning river mines shipping from the West Virginia fields on a lower freight rate, but with the river towns well stocked the river shippers are not making a hard drive for business. Some coal is expected in March, however.

BIRMINGHAM

Steam market very quiet with little spot demand. Domestic mines unable to meet the requirements for this grade of coal. Dull market conditions being met by decreased coal production.

Market conditions as respect steam coal have shown no improvement during the past week, and there is virtually no demand for the output of the commercial mines in the spot market. Consumers seem to have sufficient stocks to meet their requirements for a time and are refraining from entering the market for more coal. There is a fair tonnage of contract coal moving, which enables the larger mines to maintain practically full-time operation with some reduction in daily output, but numbers of the smaller producers are not running steadily. Steam prices are being maintained on the basis of the Government schedule in effect at the close of January.

Lump and nut coal for domestic use is still very much short of requirements, and while there is some little improvement noted in the local supply, due to the absence of cold weather, other sections of this territory have been unable to secure the fuel needed from this district, and temporary relief has been afforded in the Mobile section by shipments from the Illinois field. The inactive steam market has naturally affected the output of domestic sizes, the bulk of which comes from operations which are primarily producers of steam fuel.

Coke

CONNELLSVILLE

Slightly steadier market. Consumptive outlook not promising. Output further reduced.

The spot coke market has steadied somewhat, through the curtailment in production nearly overtaking the curtailment in consumption. There are still some offerings of demurrage coke, but they are not as numerous as a week or two ago, prices obtainable are no better and such coke is often sold at $4.25 or $4.50. For coke that is to be made after receipt of order a much stiffer situation prevails, and as formerly leading operators refuse to shade $5 for furnace coke or $6 for foundry coke. On an attractive inquiry for a month's or a fortnight's supply of furnace coke $5 might possibly be shaded, but this is doubtful. The operators have so much at stake in their regular contracts, which call for a monthly price adjustment according to the market, that they are anxious to sustain the spot market. The market is quotable at $5 for furnace and $6 for foundry coke, prompt or nearby shipment, with occasional offerings of odd lots at cut prices, while on contract coke there is no market at all.

Blast-furnace operations show a slightly decreasing tendency, but on the whole coke consumption is heavier than would have been expected in such a quiet pig-iron market. The furnaces are making scarcely any sales but shipments against old contracts are fair, and the question is how long customers will continue to take shipments. There was a fairly well attended meeting of blast furnacemen in this general district last week, at which the sentiment was developed that pig-iron prices are too high to develop buying, but no means lay open for effecting an orderly reduction and the matter is left for time to adjust, there being an expectation that the steel mills will shortly reduce their steel prices and that may give a cue to the blast furnacemen.

The "Courier" reports production of coke in the Connellsville and Lower Connellsville region in the week ended Feb. 15 at 200,356 tons, a decrease of 25,430 tons. Raw coal shipments are no longer reported.

Buffalo—The trade is quite as dull as coal. All points report such a light demand that prices are slack and declining. The Buffalo price is now down to $5 to $6, oven price, plus $2.60 freight and a few cents war tax for 72-hour foundry and a dollar less for 48-hour furnace and the off grades generally. Fuel and stock grades are moving at consumer's prices, if at all. Much of this class of coke has to be stocked. No move has been made yet in the ore trade for the coming lake season, but it is expected that the trade will go on much as last season. A period of dullness now may not mean much as to the entire season.

Middle Western

GENERAL REVIEW

Conditions cannot be much worse, and next change is expected to show improvement. Sales being made at Government prices. Question whether Illinois and Indiana will hold on to Michigan market.

The mild spring weather is continuing throughout the Middle West, and consequently even less coal is moving than would ordinarily go forward in a normal winter, when manufacturing activities were at a low ebb. The coal operator and the jobber have one consolation, and that is the situation cannot become much worse. If there is any change in conditions at all, it will be a change for the better.

There is some buying on the part of retailers, but in volume these purchases do not amount to enough to be of any great help or any great factor in the present situation. The steam market continues dead. Every now and then, however, some buyer, looking for a bargain, steps into the market and attempts to purchase coal at a reduction from the present prices. Usually this purchasing agent is able to pick up about all the coal he wishes, at the price he is willing to pay, but what he secures is not standard stuff; in fact, he usually finds that the coal offered at a reduction is not such a great bargain after all.

Prices on all well-known first-class coals are remaining firm. The reason for this is that the operators producing the better grade fuels are usually men who have been in the coal industry a long time, and know exactly how much it costs them to produce their product. After what has been taught them during the war, they feel that it is wiser to close their mines rather than sell their fuel at a loss. The parties making the low prices are usually men new at the coal game, and they probably do not know what it costs them to produce their coal. This type of operator just referred to has always been a stumbling block in the path of the entire industry, and will continue so until steps are taken to curtail his activities by those in authority.

Since Feb. 1, the buying public, both steam and domestic, have been divided into two classes. The first—those who want good coal and will pay for it. These men usually have a system whereby they can tell exactly how many heat units they get for a cent, and are fully aware of the folly of buying poor coal when the best offered is to be had at a fair price. The second class—those who may be termed "bargain hunters," consists of men tempted by the price alone, and hypnotized into the belief that they are getting standard coal below what the coal is really worth. It is encouraging to note that although little coal is being bought, most of it is sold at the old Government prices.

The situation in Michigan at this writing is perhaps worthy of note. Before the war, practically all coal going to that state originated east of the Ohio state line. During the war, and until the zones were lifted, Michigan was shut off from Eastern coal, as that fuel either went to the seaboard or was consumed by adjacent war industries. As a result, Michigan had to fall back on Illinois and Indiana mines for its fuel supply, and a large tonnage of mid-West coal was shipped into a market hitherto closed to it. It was a great question, and is still open to debate, as to whether or not the best grades of Illinois and Indiana coals will stick to their new market when normal conditions return.

As it looks now, Michigan has gone back stronger than ever to eastern coals, being willing to pay extra for the higher quality. This is especially true of the retail trade, as practically no Indiana or Illinois coal is moving to retailers in Michigan at this time. So far as steam business is concerned, some Indiana coal is being used and will continue to be used, but only the best grades that Indiana has to offer. Practically no Illinois coal is moving into Michigan, as the freight rates from Illinois mines to points in Michigan are high; in fact, so high that Illinois cannot compete with Indiana in the Michigan market, and therefore what cheap steam coal is being bought for Michigan is obtained from Indiana properties producing good coal and enjoying low rates.

CHICAGO

Practically no market. Retailers with large stocks face big financial loss. No demand for anthracite.

There is little to say about the steam coal market in Chicago, as there practically

is no market. Reports come in from time to time to the effect that plant after plant is either closing down for the time being, or working from one to three days per week. No news about new plants opening or renewing industrial activities.

The rule of the Fuel Administration in Chicago has brought about a curious situation, which will undoubtedly result in a substantial loss to a great many coal dealers, especially some of the largest dealers in this city. When all prices and other restrictions were removed by the Fuel Administration, many of these dealers found their yards stocked with a heavy tonnage of Illinois and Indiana coal—lump, mine run and screenings. Since the market eased up, it has been almost impossible to sell this accumulated storage coal at anything but a big loss; in fact, it is a difficult thing for the dealer to break even on what he has stored. Eventually this is going to work a great hardship on the retail trade in this city, as some big losses will have to be stood.

Coal from the anthracite field, as well as the West Virginia and eastern Kentucky fields, is being offered freely to the trade, with little sold. The idea of the retailer at this time is to clean up his yards and get rid of all the coal he has on hand before he obligates himself for any further fuel.

ST. LOUIS

Warm weather continues and there is no demand for any kind of coal. The surplus of screenings has brought about a critical condition at the mines. Railroad demand light, cars plentiful and transportation good.

The coal situation in this region continues to grow worse, owing to the mild weather. A great problem right now in the Standard field is to move the screenings. Some mines have been accumulating screenings for over four weeks, and all the tracks available are loaded. The railroads have been more lenient with the operators in allowing their idle equipment to stand on the tracks filled with screenings, but it has about gone the limit. Several mines that were loading railroad coal are jammed up with mine-run and are unable to move it.

There is a little demand for lump in the Standard field but it is almost impossible for the mines to work on account of the other sizes not moving. The miners are dissatisfied because they are not getting sufficient work to pay their living expenses.

The Mt. Olive operators are up against it. The Fuel Administration, in its desire to help the situation in St. Louis a year ago, classified the different coals. Several coals were taken out of the Standard field because of their quality and preparation, and put in the Mt. Olive classification. These operators, with a lower producing expense than the operators in the Mt. Olive field, are able to sell their coal for 55c. a ton less than the Mt. Olive operators are getting, with the result that all the Mt. Olive coal coming into St. Louis is the coal that was raised from the Standard grade to the Mt. Olive. This action has shut out of St. Louis almost entirely the real Mt. Olive coal, and the situation is a strenuous one, for the Mt. Olive operators. The little coal they are moving from this territory is going north and on some railroad contracts. An effort is being made to have the Fuel Administration show the cause for the classification at the time it was made and that that reason does not exist today.

In the Carterville field of Williamson and Franklin Counties, and also in the Du Quoin field in Perry County, the mines are having a strenuous time to keep working as much as half time. It is a matter of steam coal here, too, there being no place to put screenings as a rule; but even at that the demand for the screened sizes is not anywhere near what the operators anticipated. Screened coal is holding pretty well to the $2.75 price in Franklin County, while in Williamson County the association members are asking $2.75 and the independents are asking as low as $2.35.

The mines in the Big Muddy district around Murphysboro in Jackson County are idle and have been for some time, on account of their inability to move sizes.

In the St. Louis market proper business is at a standstill. There is practically nothing moving in the way of steam, for the storage piles are being used up. The same applies to railroad coal in a general way.

The mild weather brings no demand for domestic tonnage, only in small lots. There is no demand for the anthracite that has been brought in recently, and the little tonnage of Eastern smokeless that is coming in is for the most part being piled up in the dealers' yards. The same applies to the coke situation.

The prevailing prices are, per net ton f.o.b. mines:

	Mt. Olive	and Staunton	Standard
Franklin County:			
Prepared sizes (lump, egg, Nos. 1 and 2 nut)	$2 75	....	....
Williamson County:			
Prepared sizes (lump, egg, nut)	$2 55	$2 55	(As noted
Mine-run	2 20	2 20	above)
Screenings	2 05	2 05	....

Williamson-Franklin rate to St Louis is $1.10; other rates, 95c.

MILWAUKEE

Fine weather keeps the coal market flat and stale. Prices held firmly. Consumers buying soft coal in preference to anthracite at present prices.

The coal market continues flat and stale, with the weather still in favor of the consumer. As one dealer remarked: "Last year they were chasing us; now we are chasing them." Prices are being maintained, notwithstanding, and the probability is there will be no letting down until present stocks are exhausted. All yards are well supplied and are not in the market for additions to their stocks just at present. If a break ever comes it will be in soft coal, and then only in the event that Western operators begin to shade rates in order to capture new business. Coke is also firmly held, but producers are not disposing of their output with as much rapidity as formerly. Coke and anthracite coal are both deemed too high, and while there is a hue and cry throughout the city about the filthiness of soft coal smoke, dealers say there will be more soft coal burned regularly from now on, especially if coke and anthracite are maintained at anything like present figures.

The state fuel administration office will close for good on Mar. 1, in fact it is practically closed now, there being only a few of the clerical staff at work making out reports of the activities of the office during its existence.

General Statistics

CENTRAL PENNSYLVANIA SHIPMENTS

Traffic reports from the railroads for the week ending Feb. 8 show that the greatest falling off in coal shipments occurred in the central Pennsylvania field. During that week 20,970 cars were shipped from the district, as compared with 25,481 cars the week before, the loss amounting to 4511 cars, or 18 per cent. Market conditions and numerous embargoes against tidewater shipments were responsible.

The second largest loss occurred in the district which embraces southern West Virginia and northeastern Kentucky. Shipments from that territory amounted to 17,273 cars in the week ending Feb. 8 as against 18,498 cars for the week of Feb. 1. This was a loss of 1125 cars, or 7 per cent.

Other districts showed the following totals for the two weeks under consideration:

	Feb. 8 Cars	Feb. 1 Cars
Western Pennsylvania	6,623	6,654
Cumberland-Piedmont-Somerset	4,453	4,478
Fairmont	3,906	4,059
Michigan	451	327
Ohio	12,142	11,382
Southwest Virginia	2,247	2,135
Tennessee and Southeast Kentucky	9,466	9,809
Alabama	3,145	3,174
Illinois, Indiana and Western Kentucky	32,700	30,233

JANUARY ANTHRACITE SHIPMENTS

The shipments of anthracite in January, as reported to the Anthracite Bureau of Information in Philadelphia, amounted to 5,934,241 gross tons, a gain of nearly 200,000 tons over the preceding month and of nearly 300,000 tons over January, 1918. The opening month of last year was one of almost unprecedented severity which, while creating an urgent demand for coal, seriously handicapped its production and transportation. The shipments in January, 1918, amounted to only 5,638,383 gross tons, more than 1,600,000 tons less than were made two months later in March. In December, 1918, the shipments amounted to 5,736,260 gross tons. The exceptionally mild weather of this winter has been favorable to mining and transportation, and as a result production was well maintained up to the last day of the month, the shipments being the heaviest for January, with two exceptions (1913 and 1917) in the history of the trade.

The shipments by companies were as follows:

	January, 1919	January, 1918	Coal Year, 1918–1919	Coal Year, 1917–1918
P. & R. Ry	1,155,803	932,146	12,614,019	12,351,463
L. V. R.R	1,048,173	983,964	11,942,817	11,823,066
C. R.R. of N. J	497,990	524,650	5,593,362	5,722,732
D. L. & W. R.R	934,369	1,029,977	9,635,924	10,375,386
D. & H. Co	717,045	636,875	7,532,802	7,292,061
Penna. R.R	442,059	458,408	4,482,781	4,664,424
Erie R.R	687,241	632,332	7,217,303	7,361,401
N. Y. O. & W. Ry	156,328	171,667	1,641,322	1,688,509
L. & N. E. R.R	295,233	268,364	3,196,587	3,384,414
Total	5,934,241	5,638,383	63,856,917	64,663,456

Coal and Coke Securities

New York Stock Exchange Closing Quotations Feb. 24, 1919

STOCKS	Ticker Abvn.	Bid	Asked
American Coal Co. of Allegheny	(ACL)	45	....
Burns Brothers, Com	(BB)	144	146
Burns Brothers, Pfd	(BB)	110	115
Central Coal & Coke, Com	(CK)	55	....
Central Coal & Coke, Pfd	(CK)	63	....
Colorado Fuel & Iron, Com	(CF)	38	38¼
Colorado Fuel & Iron, Pfd	(CF)	99	....
Consolidation Coal of Maryland	(CGM)	75	....
Elk Horn Coal, Com	(EH)	25	29
Elk Horn Coal, Pfd	(EH)	..	27
Island Creek Coal, Com	(ICR)	39	....
Island Creek Coal, Pfd	(ICR)	75	....
Jefferson & Clearfield Coal & Iron, Pfd	(JF)	60	....
New Central Coal of West Va	(NCC)	5	....
Pittsburgh Coal, Com	(PC)	46½	47
Pittsburgh Coal, Pfd	(PC)	85½	86
Pond Creek Coal	(PD)	12½	13½
Virginia Iron, Coal & Coke	(VK)	55	60

*Ex. Div.

BONDS	Bid	Asked
Cahaba Coal, 1st Gtd., 6s, 1922	90	....
Clearfield Bituminous Coal, 1st 4s, Ser. A., 1940	71	....
Colorado Fuel & Iron, Gen. 5s, 1943	89½	91
Colorado Indus. 1st Mtg. & Col. Tr. 5s, 1934	74	74¼
Consolidation Coal of Maryland, 1st Ref. 5s, 1950	87½	90
Grand River Coal & Coke, 1st 6s, 1919	....	....
Jefferson & Clearfield Coal & Iron, 2d Mtg. 5s, 1926	96	....
Lehigh Valley Coal, 1st Gtd. 5s, 1933	99½	....
Lehigh Valley Coal, Gtd. Int. Red. to 4%, 1933	78½	....
Lehigh Val. Coal & Nav. Con. S. F., 4½s. Ser. A, 1954	90	....
Pleasant Valley Coal, 1st S. F. 5s, 1928	80½	....
Pocahontas Coal & Coke, Joint 4s, 1941	85½	86½
Pocahontas Con. Collieries, 1st S. F. 5s, 1957	87½	90
Roch. & Pitts. Coal & Ir., Helvetia Pur. Money 5s, 1946	98	....
St. L., Rocky Mnt. & Pac. Stamped 5s, 1955	81½	88
Tenn. Coal, Iron & R.R., Gen. 5s, 1951	91	95½
Utah Fuel, 1st Sinking Fund, 5s, 1931	87	....
Victor Fuel, 1st Mtg. Sinking Fund 5s, 1953	....	74
Virginia Iron, Coal & Coke 1st 5s, 1949	87½	89½